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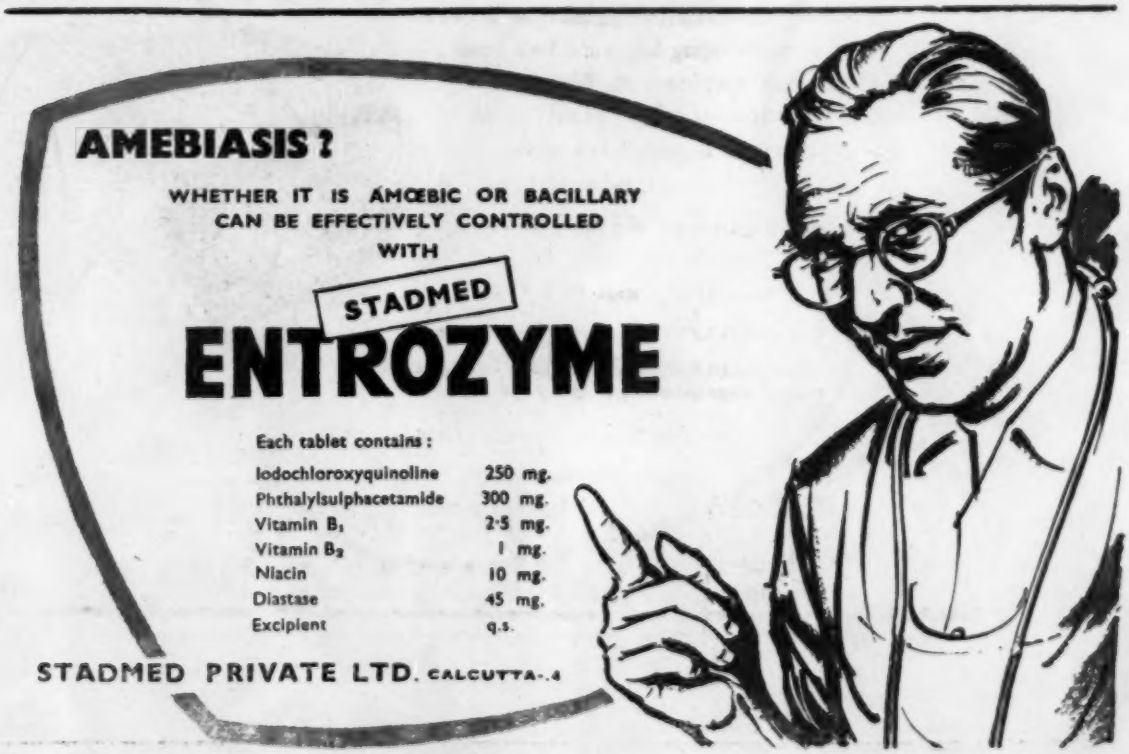

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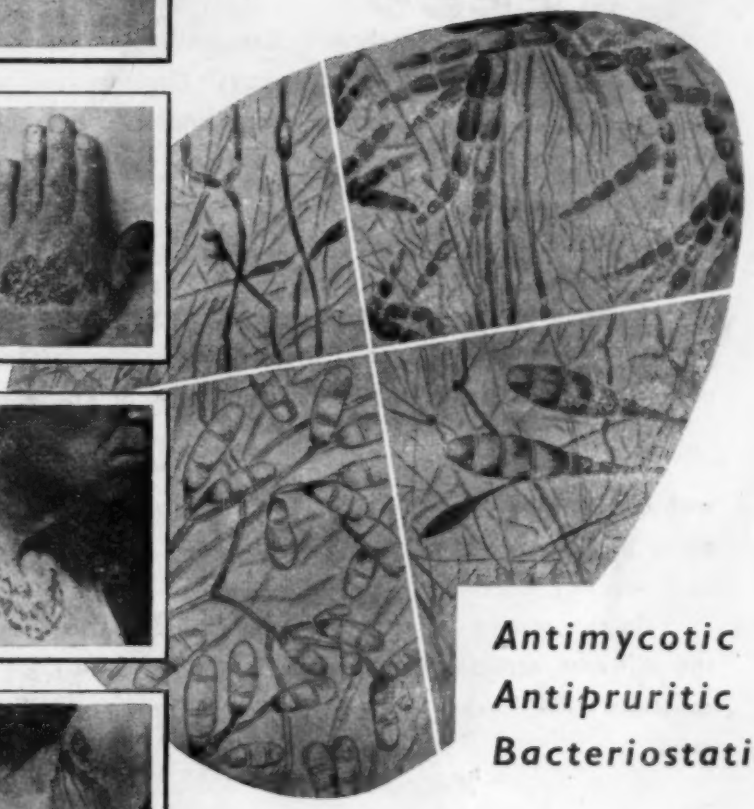

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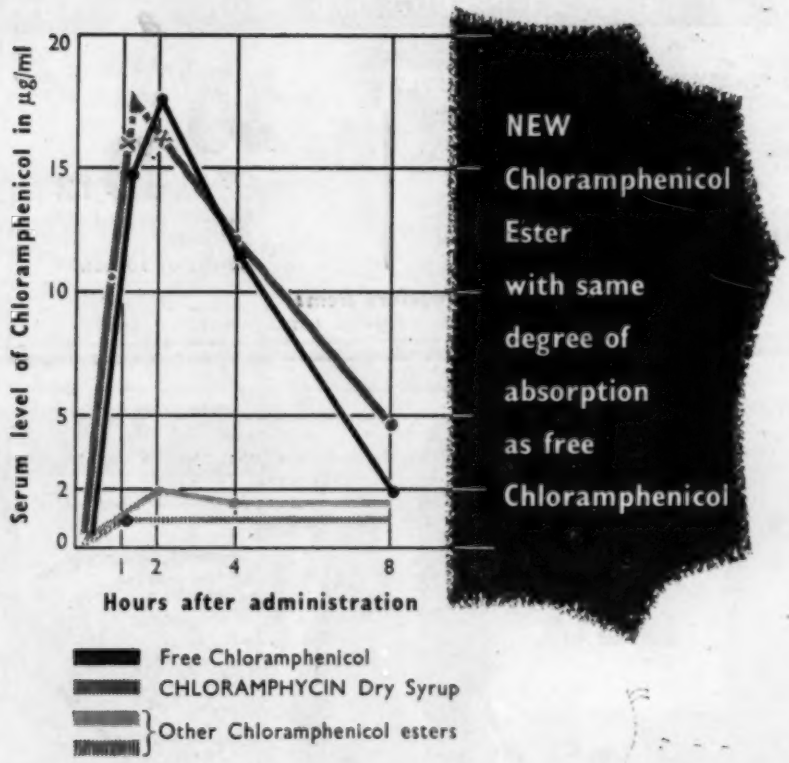

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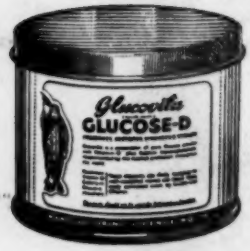

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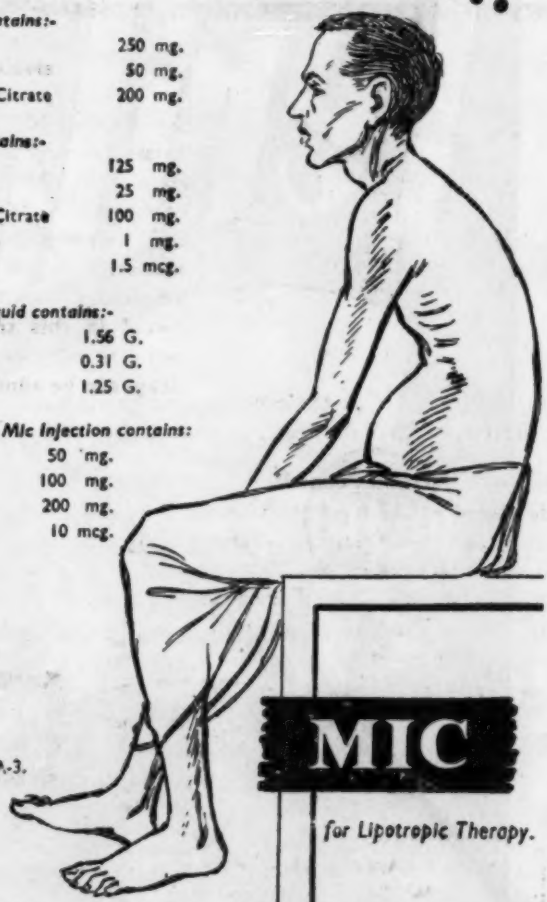

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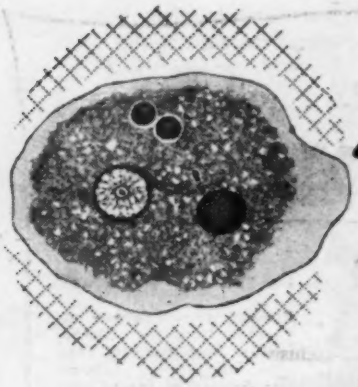

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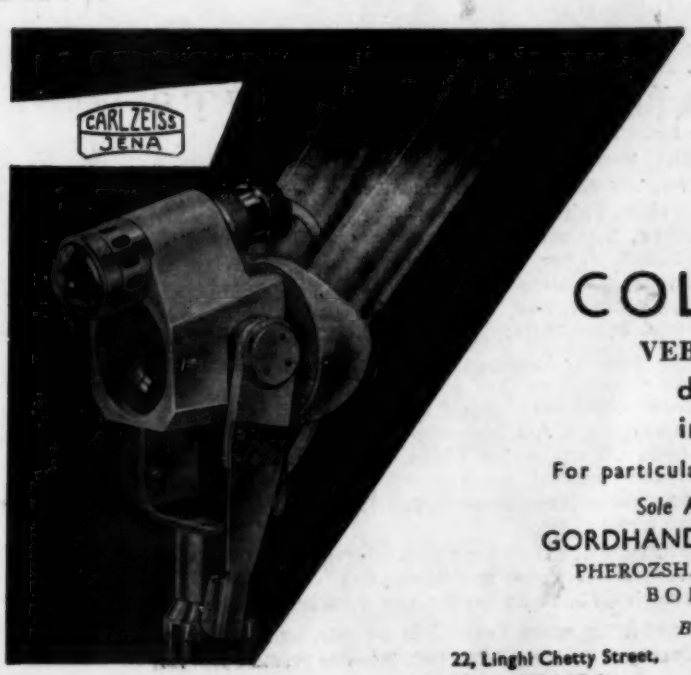

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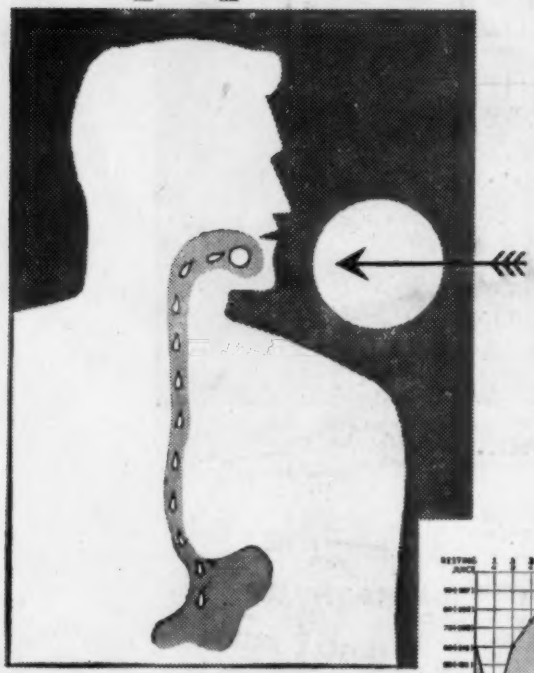

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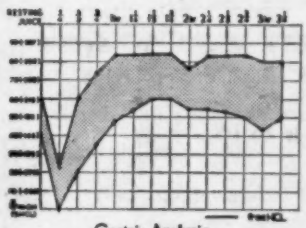
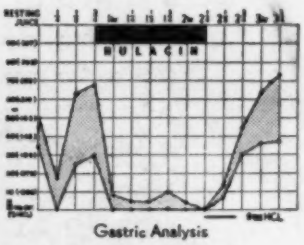


Gastric Analysis

Superimposed gruel fractional test-meal curves of five cases of duodenal ulcer.



Gastric Analysis

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ORIGINAL ARTICLES

ON THE USE OF SENSITISED RED CELLS FOR A RAPID HAEMAGGLUTINATION WIDAL REACTION

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The treatment of enteric fevers with chloramphenicol has made it imperative that laboratory methods be introduced which will guarantee a more rapid diagnosis of these fevers than available at present.

Majority of cases in this country come to the hospital about the end of the first week of disease when blood culture tends to become negative and the Widal reaction is not yet positive. Culture of blood and faeces generally requires 48-72 hours before a positive report can be given. A complete report on the Widal reaction generally requires a minimum of 18 hours. It is generally known that antibodies detectable by bacterial agglutination appear only in the second week of the disease even though the bacteria have been present in the host's tissues for a sufficient length of time (over 2 weeks).

During recent years numerous attempts have been made to improve the sensitivity of methods employed to detect antibodies in bacterial infections, viz., indirect agglutination by Coombs technique in the diagnosis of enteric fever (Stewart and McKeever, 1950) and detection of blocking antibodies, paper chromatography, use of high speed centrifugalisation of antigen antibody complex in brucella infections (Hall and Manion, 1953). Antigens adsorbed on unrelated substances for detecting small amount of antibody have also been used. Bacterial antigens have been adsorbed on collodion pellets (Jones, 1928), on carmine particles (Smorodintzeff and Fradinka, 1944). Red cells sensitised with extracts of organisms have also been used for detecting antibodies against bacterial antigens (Keogh *et al*, 1948 ; Adler, 1950 ; Spaun, 1951 ; Neter *et al*, 1952 ; Landy and Lamb, 1953). In a previous publication (Bannerji *et al*, 1957), it was shown that red cells sensitised with aqueous extracts of *Salmonella* organisms could be used to detect antibodies against somatic antigens of these organisms. On the basis of our experiments carried out with high titre rabbit antisera, it became possible to study if the sensitised red cell antigens could be used in Widal reaction for detecting the antibodies against O and Vi antigens of the organisms responsible for enteric fevers, and also to study the sensitivity of the haemagglutinating system. Sera from normal healthy individuals were included to provide data for interpreting the results.

The comparison of the bacterial and red cell agglutination tests required standard technique. The technique for bacterial agglutination in Widal reaction is almost standardised except for minor

modifications, but no such standardisation has yet been done with the haemagglutination system.

Materials and Methods

Sera—(i) Sera were collected from healthy medical student volunteers. (ii) Sera sent to the State Enteric Laboratory for Widal test were studied.

Haemagglutination technique—Chicken cells were used for the haemagglutinating system. These cells were sensitised with bacterial extracts prepared as described below. The detailed technique for sensitisation has already been reported (Bannerji *et al*, 1957).

S. typhi (O)=Supernatant from boiled (90 minutes) bacterial suspension.

S. typhi (O) A=Heated (100°C for 1 hour) supernatant from acetone dried powder in saline.

S. typhi (Vi)=Supernatant from boiled acetone dried powder in saline.

All human sera were heated at 56°C for ½ hour before use. The test proper was put up as in Widal reaction, the unit volume being 0·3 ml. Tests were kept at 37°C for 1 hour and readings taken. A tube containing 1/10 dilution of patients serum and equal volume of 1 per cent unsensitised cell suspension was always used as control. Titrations of known standard sera were also included with each set of tests.

Bacterial agglutination technique—O=forms of *S. typhi* and *S. paratyphi* A were used for preparing the bacterial suspensions. Vi suspensions were prepared with *S. typhi* Vi 1. Vi-agglutination test was carried out as described by Taylor (1947). For O- and H-agglutinations, doubling dilutions of serum were made in 0·3 ml. saline and equal parts of suspension was added. Tests were kept at 52°C and readings taken after 2 hours for H-agglutination, and after 18 hours for O-agglutination. The end titre was taken to be the highest dilution of the serum showing visible clumps on gentle shaking.

Results

Out of 32 normal healthy persons studied by both haemagglutination and agglutination procedures, 23 showed negative results with both (Table 1). Only one serum gave positive results by both ; the titre was 1/20 in each instance. The remaining *8 sera* showed discrepant results. Of these, 4 sera showed haemagglutinating antibodies against O-antigen of *S. typhi*, 4 showed similar antibodies against O-antigen of *S. paratyphi* A, and 1 showed antibodies against Vi antigen (Table 2).

Table 1—Showing the Analysis of Sera from Healthy Individuals Tested with Bacterial and Red Cell Antigens

Number of cases	Haemagglutination		Bacterial agglutination
1	...	+	+
23	...	−	−
7	...	+	−
1	...	−	+

Table 2—Showing Analysis of Haemagglutination Positive Agglutination Negative Sera from Healthy Individuals

Number of cases	Haemagglutination *S. typhi* (O)	Haemagglutination *S. paratyphi* A (O)	Haemagglutination Vi
4	+		
4		+	
1			+

Table 3 shows the results of the agglutination tests carried out with sera of suspected cases of enteric fever. 223 cases were studied by both the methods. Out of 223 cases, 40 sera showed a positive result by both the methods. In these 40 sera the haemagglutination and agglutination titres were different. Haemagglutination reaction gave higher titres as compared with bacterial agglutination. Highest amplification (32 times) of titres was observed in antibodies against Vi antigen. Haemagglutinating antibodies against O-antigen of *S. typhi* were about 3 times higher. Antibodies against O-antigens of *S. paratyphi* A showed an irregular behaviour ; in some cases bacterial agglutination showed higher titres while in others red cell suspensions gave higher titres (Table 4).

Table 3—Showing Analysis of Results with Sera from Suspected Cases of Enteric Fever

Number of cases	Haemagglutination		Bacterial agglutination
40	...	+	+
99	...	−	−
81	...	+	−
3	...	−	+

TABLE 4—SHOWING ANALYSIS OF 39 SERA FROM PATIENT SHOWING POSITIVE RESULTS BY AGGLUTINATION AND HAEMAGGLUTINATION TECHNIQUES

Enteric Laboratory Number	TITRE						
	S. typhi (O)		*S. paratyphi* A (O)		(Vi) *S. typhi*		H/A.
	Bacterial agglutination	Haemagglutination	Bacterial agglutination	Haemagglutination	Bacterial agglutination	Haemagglutination	
1517/55 ...	20	40	—	—	—	—	2
1524/55 ..	320	320	—	—	—	—	1
1636/55 ...	160	160	20	40	—	—	1 (T) 2 (A)
1487/55 ...	20	80	320	160	—	—	4 (T) 0·5 (A)
1532/55 ...	80	80	—	—	—	—	1
1541/55 ...	40	80	160	40	—	—	2 (T) 0·25 (A)
1497/55 ...	160	320	—	—	—	—	2
1805/55 ...	40	80	—	—	—	—	2
1803/55 ...	20	160	—	—	—	—	8
GS/55 ..	160	320	—	—	—	—	2
GN/55 ...	160	320	40	40	—	—	2 (T) 1 (A)
1534/55 ...	40	80	—	—	—	—	2
2041/55 ...	80	1280	40	80	—	—	16 (T) 2 (A)
2043/55 ...	160	1280	20	80	—	—	8 (T) 4 (A)
2060/55 ...	160	320	—	—	10	320	2 (T) 32 (Vi)
2045/55 ...	40	160	—	—	—	—	4
1962/55 ...	60	320	—	—	—	—	5·3
1946/55 ...	80	320	80	40	—	—	4 (T) 0·5 (A)
2074/55 ...	20	40	—	—	—	—	1
2115/55 ...	—	—	—	—	20	160	8
2168/55 ...	80	640	40	40	—	—	8 (T) 1 (A)
2315/55 ...	—	—	80	40	—	—	1
2349/55 ...	40	20	—	—	—	—	1/2
2361/55 ...	40	160	—	—	—	—	4
2551/55 ...	40	40	—	—	—	—	1
280/56 ...	80	160	—	—	—	—	2
216/56 ...	80	320	—	—	—	—	4
301/56 ...	80	160	—	—	—	—	2
728/56 ...	80	160	—	—	—	—	2
752/56 ...	160	160	—	—	—	—	1
755/56 ...	40	80	—	—	—	—	2
782/56 ...	—	—	—	—	20	80	4
815/56 ...	—	—	—	—	20	80	4
834/56 ...	80	160	40	80	—	—	2 (T) 2 (A)
926/56 ...	80	40	—	—	—	—	1
1530/56 ...	320	320	20	320	—	—	1 (T) 16 (A)
1544/56 ...	160	320	80	80	—	—	2 (T) 1 (A)
1624/56 ...	—	—	20	40	—	—	2
1817/56 ...	160	80	—	—	—	—	2

T=O-antigen of *S. typhi;* A=O-antigen of *S. paratyphi* A. Figures represent reciprocal of titres.

Out of 81 cases 71 haemagglutination positive agglutination negative sera showed antibodies against O-antigen of *S. typhi*. 34 sera showed development of antibodies against O-antigens of *S. paratyphi* A and 10 cases showed development of antibodies against Vi antigen.

The relationship between haemagglutinating antibodies and antibodies against the flagellar antigens of *S. typhi* are shown in Table 5. It

TABLE 5

Number of cases	Haemagglutination	Bacterial agglutination (H)	Bacterial agglutination (O)
26	+	+	+
11	+	+	−
66	+	−	−
96	−	−	−
9	+	−	+
11	−	+	−
4	−	+	+

may be seen that 'H' and 'O' agglutination between themselves give a positive correlation in 85 per cent cases. On the other hand, a positive correlation between haemagglutination and flagellar agglutination is seen only in 60 per cent of the cases. Negative correlation is mainly due to the presence of haemagglutinating antibodies.

DISCUSSION

A comparison of the results obtained with bacterial agglutination and haemagglutination techniques to detect antibodies against 'O' and Vi antigens indicated that the two techniques were generally comparable. Sera from healthy individuals showed a positive correlation between the two methods in 75 per cent cases while sera from suspected cases of enteric fever showed a similar correlation in 62 per cent cases.

The types of discrepancies were, however, noticed when the results were compared in detail. Firstly in most cases, which gave positive results with both techniques, the haemagglutination titres tended to be higher than the bacterial agglutination titre. The ratio of haemagglutination to agglutination titres of antibody against O-antigens of *S. typhi* varied from 16 to 1. Antibody ratio against O-antigen of *S. paratyphi* A varied from 4 to 1. Antibody against Vi antigen showed that haemagglutination titres were 4 to 32 times higher. Analysis of the cases showing a negative correlation between the results obtained with two types of antigens revealed that large number of these cases were haemagglutination positive and agglutination negative. 25 per cent of sera from healthy individuals and 38 per cent of sera from suspected cases of enteric fever were found to possess agglutinating antibodies against the sensitised red cells which under conditions of our test could not be detected by the bacterial antigen. The titre of the haemagglutinating antibody was generally of a low order (20 to 40). Only an insignificant number (less than 1 per cent) of sera, both from healthy individuals and from patients, agglutinated bacterial suspension and were haemagglutination negative. Analysis of the relationship with the antibody against flagellar antigen indicated that in a large number of cases (30 per cent) haemagglutinating antibody was present in the absence of flagellar agglutination. In most cases this haemagglutinating antibody was detected against the O-antigens of *S. typhi*.

The negative correlation between haemagglutinating antibodies and antibodies against O-antigen of bacteria could be explained in a number of ways.

Haemagglutination test could be positive due to a non-specific factor in human sera capable of agglutinating chicken red cells ; that it was not so was shown by the fact that unsensitised cells, in the presence of the serum were not agglutinated. That the process of sensitisation does not lead to a change in surface antigen of the red cells has been reported by Hayes (1951), and Wright and Feinberg (1951). These workers found that the blood group specificity of the red cells and various other reactions of red cell surface with viruses, toxins, and complement were not altered due to treatment of the red cells with bacterial extracts. Therefore, it would be unlikely that the agglutination of the sensitised red cells was due to the appearance of new red cell antigens on the surface, antibodies against which were present in the sera. The discrepancy in the results, however, cannot be explained by assuming variable adsorption of O-antigen factors. Unpublished data from our experiments showed that haemagglutination titres with factor sera were the same or lower than bacterial agglutination titres.

It may be that the haemagglutination was due to some non-specific antigen adsorbed on the red cells and that the red cells adsorbed along with the specific antigens some other antigen against which antibodies were present in certain human sera. This could be detected only if chemically pure antigens were used for sensitising the red cells. The non-specific antigen if present, would be heat stable and so would be the reactive substance in the

serum. Observations on non-specific haemagglutination have been recorded by other workers. Middlebrook and Dubos (1948) found that the reacting substance against red cells, sensitised with extracts of tubercle bacilli, was present in low titres in sera from rabbits which had been immunised against pneumococci, Friedlander bacilli, and *Shigella flexneri*. It was also observed in low titres in pooled W.R. positive human sera. With red cells sensitised with streptococcal extracts, Kirby (1951) found no significant difference in haemagglutination titres of sera of patients suffering from streptococcal sorethroat, non-streptococcal respiratory infections and acute rheumatic fever. Moreover in the same patient haemagglutination titre tended to remain constant with both acute and convalescent sera. It was concluded that a non-specific reaction of some type was responsible for the agglutination of red cells sensitised with streptococcal extracts. Fisher (1950) also observed that the adults not suffering from whooping cough showed positive agglutination with red cells sensitised with extracts of *H. pertussis*.

The possibility cannot be excluded that the discrepant results obtained by us may be due to two techniques measuring different types of antibody.

Alexander *et al* (1950) investigated the relationship of haemagglutination to agglutination titres with sera of vaccinated and convalescent cases of tularemia. The results showed that the ratios of haemagglutination to agglutination varied from 0·25 to 16. This 64 fold variation was much greater than the experimental error of the method. The authors therefore concluded that the variation was present because the two titrations measured different activities of the sera. Moreover, experiments on sera obtained after successive courses of vaccination in the same individuals showed that in general the haemagglutination titre appeared to be maintained or to be increased on continued immunisation, whereas the agglutination titre remained constant, or was found to be decreased. In our own observations, about 10 per cent of cases showed very high haemagglutination titres in the absence of any antibody against bacterial antigen. It is possible that in these cases the nature of the haemagglutinating antibody was different.

On the other hand, the discrepancy of our results can also be accounted for by assuming that the haemagglutination test was more sensitive in detecting antibodies against Salmonella antigen than the corresponding bacterial agglutination. This assumption finds support in the work of Landy and Lamb (1953) who found that haemagglutination test provided a more sensitive measure of Vi antibody by a factor of 3 to 6 fold. Likewise, Freeman *et al* (1955) found haemagglutination to be 2 to 3 times more sensitive than bacterial agglutination in detecting antibodies against Salmonella and several other gram negative organisms.

Our own observation during the course of experiments on standardisation of bacterial extracts indicate that at least Vi haemagglutination titres are 8 to 16 times higher than bacterial agglutination titres. The fact that with sera, which agglutinated both the red cell and the bacterial antigen, the haemagglutination titres were generally much higher than bacterial titres, lends further support to this view. Assuming that the titres with red cell antigen was about 2 to 4 times the one obtained with bacterial antigen, most of the discrepant results (90 per cent) with O-antigen typhi would be eliminated. The haemagglutination titre in these cases was generally below 80, its corresponding bacterial agglutination titre being less than 20; these sera would be declared negative with the traditional Widal technique, because the titration starts with a final dilution of 1 in 20.

In view of the above, the haemagglutination Widal would be comparable with the tests carried out with O and Vi suspension of bacteria. The normally occurring haemagglutinating titre would, however, have to be determined before interpreting results with sera from cases of enteric fever.

Summary

1. Chicken cells suspension, sensitised with aqueous extracts of *S. typhi*, *S. paratyphi* A and *S. typhi* Vi, were used to detect antibodies against O-antigens in sera from healthy individuals and from sera from suspected cases of enteric fever. All tests were put up in parallel with bacterial agglutination techniques.

2. The results were generally comparable except for some discrepancies. A number of cases gave positive haemagglutination, although in low titre, but were negative with bacterial antigens. Haemagglutination titres were also generally higher when both types of antigens gave positive results.

3. A report on O-agglutination in Widal reaction could be given in one hour with haemagglutination technique instead of the usual 18—24 hours with bacterial suspension.

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FURTHER CLINICAL OBSERVATIONS ON THE THERAPEUTIC VALUE OF ACETAZOLEAMIDE

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Since our last communication (Chatterjee *et al*, 1956), many more papers on the therapeutic value of acetazoleamide have been published. Uptil then no such report came to our notice, although meanwhile Banerjea and Choudhuri (1955) recorded their observations on 32 cases and concluded that diamox, though a less potent diuretic than the mercurials, was more useful in nutritional oedema and cirrhosis of the liver and a little less so in congestive cardiac failure.

Since the two cases with probable pathological lesion of the liver in our last series developed coma and died under identical circumstances we could not regard the matter as a mere fortuition. Inadequate facilities for biochemical investigations, however, prevented relevent studies and no definite conclusion could be reached, although it was speculated that in chronic liver disease acetazoleamide may produce an irreversible inhibitory effect on the carbonic anhydrase enzyme system in the brain. Reports on observations similar to ours, but established on more elaborate investigations, are now available (Webster, 1955; Webster and Davidson, 1956) and the cause of coma seems at least partly explained.

Apart from its use in hepatic oedema, acetazoleamide has been used in various other conditions with variable results. Our studies are mainly clinical regarding the diuretic potency of the drug and the overall clinical improvement of the patients receiving it. In the present report the 7 patients reported previously are also included.

MATERIAL AND METHOD

A total of 44 patients, for whom a diuretic was indicated, were included in the trial. One patient of cardiac oedema was later excluded as he died within a few hours of administration of acetazoleamide and the death was definitely unrelated to its use. 43 patients therefore completed the trial. Of these 29 had cardiac, 4 renal, 7 hepatic, and 3 nutritional oedema. One patient diagnosed as splenic anaemia has been included in the hepatic group and another with nutritional megaloblastic anaemia without hypoproteinaemia has been classified with nutritional oedema (Table 1).

Acetazoleamide was given orally on three consecutive mornings initially. It was continued for a period of seven days in those who responded well (29 patients) and was discontinued in others after the third day. The daily dose varied between 125 mg. (½ tablet) and 250 mg. according to the age. It was not increased even when the response was poor. Only in one patient of cor pulmonale with anoxic coma a dose of 750 mg. daily was given for 3 days.

The daily intake of fluid was restricted to two pints and the food was cooked and served without salt. But since it was not possible to prescribe the same diet for every patient the amount of fluid and salt naturally varied slightly in different patients. The variation, however, does not seem to be significant. The 24 hours' urinary output was measured and recorded against the intake.

The patients' statements regarding diuresis and new subjective symptoms, if any, were recorded without any suggestion, together with any new physical sign that developed. These new subjec-

TABLE 1—SHOWING DIURETIC EFFECT OF ACETAZOLEAMIDE IN 43 PATIENTS

Disease	Result			Total
	Good	Fair	Poor	
Cardiac failure :				
Cor pulmonale	10* (83%)	2	0	12 (100%)
Hypertension	5 (55·5%)	2	2	9 (100%)
Valvular disease	2	1	1	4
Arteriosclerosis	1	0	1	2
Coarctation of aorta	0	1	0	1
Undetermined aetiology	1	0	0	1
	19 (65%)	6	4	20 (100%)
Renal oedema :				
Type 2 nephritis	0	1	2	3
K.W. syndrome	0	0	1	1
	0	1	3	4
Hepatic oedema :				
Portal cirrhosis	2*	2	2	6
Splenic anaemia	0	0	1	1
	2 (29%)	2	3	7 (100%)
Nutritional oedema :				
Hypoproteinaemia	1*	0	1	2
Nutritional megalobastic anaemia	1	0	0	1
	2	0	1	3
TOTAL	23 (53·5%)	9 (21%)	11 (25·5%)	43 (100%)

* One patient had apparently profuse diuresis. But the output could not be measured as urine was passed in bed linen.

tive and objective phenomena were assessed on the background of the disease as well as other therapeutic measures before they were regarded as side effects and toxic reactions of the drug.

Systematic studies of electrolyte balance were not possible for lack of facilities. No placebo controls were kept. But 21 patients were given parenteral mercurial diuretic, without preliminary dose of ammonium chloride, before and/or after acetazoleamide (6 before, 12 after and 3 both before and after). The time interval between the administration of the two drugs was always more than 48 hours. Appropriate therapeutic measures for the different diseases were not withheld during the administration of acetazoleamide.

RESULT

Diuresis.—The result is classified and tabulated as 'good', 'fair', and 'poor' according to an arbitrary criterion (Table 1). Urinary output of 4 pints+ in 24 hours is regarded as good, between 2 and 4 pints as fair and less than 2 pints as poor.

Diuresis generally started 2-3 hours after the administration of the drug and continued for 8-12 hours. But in 3 patients it started after the second dose (on the second day). In all these 3 cases the result was fair. The urinary output gradually declined on continued use of the drug till the 4th to 6th day when practically no diuresis resulted except in 2 cases of cor pulmonale in whom it was maintained, though at a lower level.

Side effects and toxic reactions.—A classified list of the side effects, found in this series, is given in Table 2A. These were observed in 14 patients.

TABLE 2A—SHOWING FREQUENCY OF TOXIC AND SIDE-EFFECTS MANIFESTED

Systems involved	Number of reactions	
Nervous system :		
Drowsiness	6 (3 passed into coma)	
Confusion	4	
Coma	3 (all died)	
Paraesthesia	2	
Giddiness	1	
Restlessness	1	
Insomnia	1	
Convulsion	1	
Lack of concentration	1	
'Empty headedness'	1	
		21
Alimentary system :		
Nausea	3	
Diarrhoea	3	
Abdominal pain	1	
		7
Urinary system :		
Strangury	1	
		1
General and metabolic :		
Rise of temperature	2	
Transient hyperglycaemia and glycosuria	1	
Urticaria	1	
		4
Total number of reactions in 14 out of 43 patients		33

A comprehensive analysis of these patients is shown in Table 2B. It will be obvious that the maximum incidence of the untoward reactions was in cases of liver disease (3 out of 7) and that the nervous system was most frequently involved irrespective of the disease.

TABLE 2B—ANALYSIS OF 14 CASES SHOWING TOXIC AND SIDE-EFFECTS WITH ORAL ADMINISTRATION OF ACETAZOLEAMIDE

Case No.	Diagnosis	Diuretic response	Toxic and side-effects
5	Portal cirrhosis	Good	Transient hyperglycaecaemia and glycosuria, drowsiness, confusion, coma, convulsion, death
6	Nutritional hypoproteinaemic oedema	Good	Confusion, drowsiness, coma, **death**
17	Cor pulmonale	Good	Abdominal pain, restlessness, confusion, nausea
21	Portal cirrhosis	Good	Rise of temp. (max. 101°F), paraesthesia of limbs, diarrhoea
22	Aortic and mitral valvular disease	Poor	Rise of temp. (max. 103°F), strangury
24	Arteriosclerosis	Good	'Empty headedness', lack of concentration
28	Aortic and mitral valvular disease	Good	Giddiness, nausea
33	Cor pulmonale	Good	Diarrhoea
37	Portal cirrhosis	Poor	Confusion, drowsiness, coma, **death**
38	Cor pulmonale	Good	Diarrhoea, urticaria
39	Cor pulmonale	Fair	Drowsiness
40	Hypertension	Good	Drowsiness
41	Hypertension	Good	Drowsiness
42	Arteriosclerosis	Poor	Nausea, paraesthesia of limbs, insomnia

Like our previous experience, one more case of hepatic cirrhosis died in coma after receiving acetazoleamide. At that time we were not aware of observations of Webster (1955) and the absence of fatal reactions in 5 other cases of hepatic cirrhosis emboldened us to prescribe the drug for this patient.

Clinical improvement.—All the patients except 4, who had good diuresis, showed corresponding degree of clinical improvement. But besides relief of oedema one patient of cor pulmonale showed remarkable improvement of symptoms which appeared to be due to anoxia and we believe that acetazoleamide therapy was responsible for the gratifying result.

Acetazoleamide and mercurial diuretics.—Of the 6 patients who had neptal before diamox 3 had equally good result and one had equally poor result with both drugs. In one patient the result was poor with neptal and good with diamox and in another it was *vice versa*.

When neptal was used after diamox equally good result was obtained in 5 of the 12 patients and 2 recorded fair result with both the drugs. Neptal produced good diuresis in the remaining 5 when response with diamox was fair in 2 and poor in 3.

Three patients received neptal both before and after diamox which produced good diuresis in 2 and fair in 1. With neptal, however, one of the good responders with diamox had poor output on both occasions but the other 2 recorded good response both times.

DISCUSSION

In the absence of a searching biochemical probe this report deserves the value only of a clinical study and not that of a controlled experiment..... "As often happens, clinical use introduces variables not anticipated in the controlled experiment....." (*Lancet*, 1955) and in medical practice the knowledge of the variables is not unimportant.

There have been conflicting reports regarding the efficacy of acetazoleamide in cardiac failure, due to hypertension, ischaemic and valvular diseases (Belsky, 1953; Friedberg *et al*, 1953; Relman, *et al*, 1954; Ruskin, 1955; Hanley and Platts, 1956).

In the present series out of 17 cardiac cases other than cor pulmonale 9 (52 per cent) produced good diuresis and another 4 (23·5 per cent) had fair output. This result was not altogether disappointing and it appears that acetazoleamide may serve as a second alternative in the choice of diuretics in non-pulmonary heart disease when mercurials are contraindicated.

In contrast diuresis was established in all 12 cases of emphysema heart failure and in 10 it was good. Furthermore, the relief of anoxic symptoms in one case was encouraging. But it will be hazardous to form an opinion on an isolated instance, this is more so in the absence of corroborative biochemical evidence. Schwartz *et al* (1955) reported favourable results in emphysema heart failure. Naddel (1952) and Heiskell *et al* (1954) claimed relief of respiratory acidosis by the use of acetazoleamide. But observations of Wishart and Isaac (1955), Simpson (1955), and also Schwartz *et al* (1955) do not support this claim.

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They found that although the CO_2 level of arterial blood fell, the PCO_2 was unaltered, or in fact, increased in some cases.

Another fact that requires comment is that two cases, both of cor pulmonale, had good diuresis with acetazoleamide when a mercurial diuretic failed to produce any. It is possible that the mercurial could increase the urinary flow with a preliminary dose of ammonium chloride, which was not tried.

Although a bigger series with more elaborate studies would help in better assessment, our experience leads us to think that acetazoleamide has a definite place in the treatment of emphysema heart failure.

The number of patients in renal and nutritional groups was too small for critical comments. None of the 4 cases of nephrotic syndrome had significant diuresis, whereas 2 out of 3 nutritional cases responded well. This seems to agree with the observation of Banerjea and Choudhuri (1955).

The result was very disappointing in the hepatic group not only in regard to the diuretic effect of the drug but also because of frequent and serious toxic effects. Of the 7 cases, 3 failed to respond at all and the other 4 equally shared good and fair response.

Side effects and toxic reactions were observed in 14 (32 per cent) of our cases. Of these 3 had hepatic cirrhosis. If we include in this group a case of nutritional oedema, in whom there is reason to believe that the liver was pathologically involved, it will be found that at least 28·5 per cent of all patients showing reactions had structural and functional abnormality of the liver. Three of these patients developed coma and died. The severity of the reaction did not, however, necessarily correspond with the severity of the pathological involvement of the liver.

In our last communication (Chatterjee *et al*, 1956) we commented on the possible danger of using acetazoleamide in the treatment of patients with chronic pathological involvement of the liver. Webster and Davidson (1956) found confusion and 'flapping' tremor, the characteristic features of impending coma, in 3 out of a group of 4 patients of hepatic cirrhosis receiving acetazoleamide. Two of them had a significant rise in NH_3-N level of systemic venous blood. Of the 8 cases in another group 5 had equally severe cirrhosis. But none showed signs of impending coma with the drug and the blood NH_3-N level, though elevated in all, was not alarmingly high in any. In our present series we had 3 patients who actually passed into deep coma, and one of them showed 'flapping tremor'. Blood NH_3-N level could not, however, be determined.

Although the rise of ammonia nitrogen level in the systemic venous blood in hepatic coma is now well recognised, its significance in the pathogenesis of the coma is not fully established. On the other hand, hepatic coma is not always associated with an elevated blood ammonia level. However, from the work of Webster and Davidson (1956) and from our observations we cannot escape the conclusion that acetazoleamide can precipitate coma in patients with grossly damaged liver.

Incidentally, it is the common experience that the management of ascites of hepatic cirrhosis is notoriously difficult. Repeated paracentesis helps little and may introduce infection and induce coma, besides increasing the hypoproteinaemia. The mercurial diuretics remain the other alternative weapon. But multiple painful pricks are not always welcome. Under such circumstances it may appear tempting to use acetazoleamide. As will be apparent such an attempt cannot be recommended. Acetazoleamide is not only a comparatively feeble diuretic but also a potentially dangerous drug to use in chronic liver diseases.

Most of the other side-effects and toxic reactions have been reported previously (Naddel, 1952 ; Friedberg *et al*, 1953 ; Belsky, 1953 ; Relman *et al*, 1955 ; Ruskin, 1955). One of our patients had urticaria which he never experienced before. It can presumably occur with a sulphonamide derivative like acetazoleamide. We also found sudden rise of temperature (2 cases), diarrhoea (3 cases), abdominal pain (1 case), and convulsion (1 case), for which no explanation can be offered at this stage. The cause of hyperglycaemia and glycosuria also remains obscure in one patient.

When parenteral mercurial diuretic and acetazoleamide were given to the same patients the diuretic response varied whether one was given before or after the other. When the mercurial was given before acetazoleamide the result was practically the same with both. When on the other hand, the mercurial was used after acetazoleamide 5 of the 12 patients had much better diuresis with the former. Acetazoleamide causes hyperchloraemic acidosis, which may account for the good response with the mercurial diuretic. But the hyperchloraemia does not persist for more than a few hours and the interval between the administration of the two drugs in our patients was always more than 48 hours.

Summary and Conclusion

43 patients were treated with oral dose of acetazoleamide (diamox). Of these 29 were cardiac cases, 4 were cases of nephrotic oedema, 7 of hepatic oedema and 3 of nutritional oedema.

Each patient received 125-250 mg. (½—1 tablet) of the drug daily according to the age for three consecutive days. Those who responded well with the initial therapy were kept on the same dosage for a total period of 7 days.

23 (53·5 per cent) patients had good diuresis (4 pints+). The response varied greatly in different groups of patients. 65·5 per cent of all cardiac patients produced good diuresis, but 83 per cent of those of cor pulmonale were good responders. Besides the diuretic response one patient of cor pulmonale showed remarkable improvement in anoxic symptoms. On the other hand good diuresis was obtained only in 29 per cent of patients with hepatic oedema. In other groups the number of patients was too small for proper assessment.

14 (32 per cent) patients showed toxic and side effects and three of them died in coma. Two of the fatal cases had hepatic cirrhosis and the third was a case of gross nutritional oedema with possible pathological involvement of liver.

21 patients received parenteral mercurial diuretic before and/or after acetazoleamide and the comparative results are analysed and discussed. On the whole the mercurial was a better diuretic and a dose of acetazoleamide perhaps potentiates it more, even when given 48 hours previously.

From this clinical trial it may be reasonably concluded that acetazoleamide has a definite place in the treatment of emphysema heart failure and it may be regarded as a second alternative to mercurial diuretic in the treatment of heart failure due to other causes. It is not only practically useless but may be definitely dangerous in chronic liver disease.

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CLINICAL EXPERIENCE WITH A NEW ORAL HYPOGLYCAEMIC DRUG†

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INTRODUCTION

Recently a new sulphonamide compound—Nadisan N_1-sulphanilyl-N_2-n-butylcarbamide has attracted world attention in view of its claimed effectiveness in the oral treatment of diabetes mellitus. Clinical reports from different sources are found to be encouraging (Franke and Fuchs, 1955 ; Bertram *et al*, 1955 ; Kinsell *et al*, 1956 ; Mirsky *et al*, 1956 ; Miller and Dulin, 1956 ; Duncan *et al*, 1956 ; Wolf *et al*, 1956 ; Hunt *et al*, 1956 ; Mckenzie *et al*, 1956 ; Walker *et al*, 1956 ; Murray and Wang, 1956 ; Unger and Davidson, 1956).

According to Bertram *et al* (1955) this compound proved to be of great success in the treatment of adult middle aged diabetics free from ketonuria and other complications. Clinical trial of nadisan was, therefore, undertaken in a group of selected uncomplicated adult diabetics free from ketonuria and albuminuria with a view to assess the antidiabetic value of the drug. The investigation was carried out on patients of ambulatory types only.

† A preliminary report.

Materials and Methods

After taking a detailed history, a thorough clinical examination was carried out in every case. The patients were instructed to stop all their treatment, if they were having any, and to collect 24 hours (8 A.M. to 8 A.M.) urine which was examined both qualitatively and quantitatively for glucose by Benedict's method. A fresh sample of the patient's urine was also examined for albumen and acetone and fasting blood sugar was determined by 'Folin and Wu's micromethod'. A preliminary selection was made of patients who were free from ketonuria, albuminuria and other complications and of the age group of 30 years and above. The patients were educated to follow a calculated diet* for a period of one week. After one week of dieting their blood and urine were examined as mentioned above. Patients showing hyperglycaemia, 200 mg. per cent and above and glycosuria 1 per cent and above were finally selected for treatment with nadisan. During treatment patients were instructed to continue dieting. None of the patients had any complaint about his or her diet.

The drug was administered orally in the dosage of 2 g. (4 tablets of 0·5 g. each) on the first day, 1·5 g. (3 tablets) on the second day and 1 g. (2 tablets) daily from the third day onward. During the period of observation fasting blood sugar of the patients was determined and their urine examined for sugar, albumen and acetone periodically. The body weight of the patients under observation was recorded at intervals.

During the course of treatment the patients were instructed to report immediately if they encountered any unusual experience like sorethroat, tendency toward bleeding, skin eruptions or fever.

* Diet was calculated on the basis of true calorie requirement measured out from the height, weight and age with the help of Boothby & Sandiford's Nomograph. The total calorie was usually distributed as follows:
Carbohydrate—250 g. and protein—0·8 g. per lb. of body weight and fat to make up for the remaining calories.

Results

The findings before starting nadisan and 10 days and 3 to 4 weeks after nadisan administration have been shown in Table 1.

1. *Effect of 10 days nadisan therapy*—The data available show that nadisan can effectively suppress hyperglycaemia and reduce or completely annul glycosuria in clinical diabetes, when combined with a suitable dietetic regimen mentioned. The mean average reduction of fasting blood sugar after 10 days period of treatment was from $248 \pm 9{\cdot}6$ to $157 \pm 6{\cdot}24$ mg. per 100 c.c. or the hyperglycaemia was reduced by 37 per cent. The individual response was also quite satisfactory except in Case 12, which did not respond. Glycosuria (24 hours) practically disappeared in the majority of cases except in Cases 4 and 12, whose urine showed an estimable amount of sugar. We

Table 1

Serial No.	Sex	Age of onset	Duration	Before treatment				After 10 days of nadisan treatment			After 3 to 4 weeks of nadisan treatment		
				Body weight in lb.		Blood sugar in mg. per cent	Urine sugar in g. per cent	Body weight in lb.	Blood sugar in mg. per cent	Urine sugar in g. per cent	Body weight in lb.	Blood sugar in mg. per cent	Urine sugar in g. per cent
				Actual	Calculated								
1.	m	60	5 yrs.	120	150	260	1·0	120	184	Nil	126	154	Nil
2.	f	48	2 ,,	142	—	230	2·7	142	175	Nil	144	180	Nil
3.	m	50	13 ,,	160	150	256	1·4	162	156	Nil	164	134	Nil
4.	m	49	4 ,,	114	145	250	2·0	116	152	1·0	—	—	—
5.	m	41	10 ,,	160	—	203	4·5	162	155	—	158	125	Nil
6.	f	30	6 mths.	97	125	206	2·0	97	154	Nil	96	160	Nil
7.	f	—	—	134	126	240	2·0	133	130	Nil	134	130	Nil
8.	m	64	1 yr.	116	150	300	2·5	121	170	Nil	120	140	Nil
9.	m	59	1 ,,	132	136	224	4·0	133	150	Nil	133	140	Nil
10.	m	36	4 yrs.	119	130	300	5·0	119	180	Nil	117	160	Nil
11.	m	30	6 ,,	175	139	200	1·3	175	140	Nil	175	140	Nil
12.	f	31	4 ,,	68	118	380	3·3	67	380	3·0	66	240	3·5

Cases No. 2, 4, 5, 8, 9, 11 and 12 were having insulin treatment which was stopped during nadisan therapy except in Case 12 in which insulin had to be continued.

did not encounter any case of acidosis or albuminuria.

2. *Follow-up study*—During the period of subsequent follow up of the cases it has been observed that in 6 (Cases 3, 5, 6, 7, 9 and 11) out of 12, blood sugar came down to the level of 130 to 140 mg. per cent within 3 to 4 weeks of treatment with nadisan. Of the remaining 6 cases, in four (Cases 1, 2, 8 and 10) though the blood sugar came down (below 200 mg. per cent) considerably below the pre-treatment level, was still above the desirable level of 140 mg. per cent. Case 12 was a therapeutic failure as no improvement either clinical or otherwise was noticeable. Nadisan treatment of the above five cases was continued nonstop. Case 4 could not be followed as the patient failed to turn up not due to any ill-effect of treatment, but due to some other reason. No appreciable change in the weight of the patients occurred during the period of observation. Nadisan treatment was discontinued in patients whose blood-sugar came down to 130 to 140 mg. per cent. Their blood and urine were examined at intervals during the period of abstinence. Observations so far made by us show that in almost all cases blood sugar begins to rise on discontinuation of the drug. Nadisan treatment in the dose of 1 gram a day was restarted in patients whose blood sugar reached a level of 180 mg. per cent or above on discontinuation of the drug.

During the 4 week period of treatment with nadisan, no clinical evidence of any of the usual 'toxic action' or any evidence of hypoglycaemic hazard was encountered in any of the patients mentioned.

Discussion

From the results it is clear that nadisan is an effective oral blood-sugar lowering agent. It can suppress the hyperglycaemia in adult diabetes free from acidosis, to the extent 37 per cent when administered along with a dietetic regimen, within a period of 10 days. Reduction of glycosuria also runs parallel with its blood-sugar lowering effect.

When the drug is continued as a maintenance therapy for a period of 4 weeks it can effectively stabilise the blood-sugar level within the range of 130 to 140 mg. per cent and is accompanied by absence of sugar in the urine. In our series Case 12 is a therapeutic failure. Probably she is also suffering from incipient acidosis which is kept just in control by insulin. This is confirmed by the fact that she passed into coma about 6 months back necessitating hospitalisation.

No apparent clinical evidence of toxicity suggests that nadisan is a relatively less toxic sulphonamide compound which can be used with a calculated risk, if any.

Although the immediate effect of this drug is promising, it is too early to comment as to whether it can act as an insulin substitute or an insulin sparing compound in diabetes mellitus. The mechanism of action of the drug is not known.

Summary

Nadisan can suppress the hyperglycaemia and glycosuria in elderly diabetic patients free from acidosis, when maintained on a restricted diet.

When a maintenance therapy is instituted fasting blood sugar level is established in the range of 130 to 140 mg. per cent in 6 out of 12 cases followed up.

No apparent clinical evidence of toxicity was observed in any of the patients during the period of treatment.

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COMPARATIVE ESTIMATION OF BLOOD VOLUME BY P^{32} TAGGED RED CELLS AND DYE HAEMATOCRIT METHOD IN HUMAN SUBJECTS

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INTRODUCTION

Hevesy (1944) devised a method of labelling erythrocytes with radioactive elements. This method was successfully utilised by him to determine the circulating red cell volume by tagging cells with the radioactive isotope of an erythrocyte metabolite, e.g., P^{32}. Like P^{32}, carbon monoxide and radioactive iron have also been used in the determination of the cell volume and dye haematocrit method has been used to determine the plasma volume. Both carbon monoxide and dye haematocrit method gave higher values than those obtained by P^{32} method (Lowbeer, 1950). Hevesy's investigations indicated that P^{32} labelled cell method might constitute the more accurate method in determining the circulating red cell volume. Many workers have reported blood volume measurements done with various methods but the results varied widely. The purpose of this work was to determine blood volume simultaneously employing the dye haematocrit method and the P^{32} tagged cell method and to compare the results in the light of those obtained by other workers.

METHOD

In order to measure blood volume employing P^{32}, it is necessary to prepare labelled red cells containing the known amount of P^{32}. Six ml. of heparinized blood freshly drawn from the experimental subject is divided into two halves. From the first half the value of the haematocrit is noted and the plasma retained. The other half is incubated at 37°C for 1½ hours with 50 μcs of P^{32} obtained from the Atomic Energy Research Establishment, Harwell, in the form of isotonic Na_2HPO_4. The specific activity of the radioactive solution being very high the total phosphate content is negligibly small. About 30 per cent of the added P^{32} enters the red cells during the period (Reeve and Veall, 1949). On entry the $P^{32}O_4$ ions exchange with the $P^{31}O_4$ ions already there and take part in the phosphorylations of the red cells carbohydrate cycle, becoming attached to trioses and hexoses (Hevesy, 1948). The P^{32} entering the cells becomes loosely bound and at body temperature is lost very slowly from the blood stream. In man and rabbit the rate of loss averages about 6 per cent of the total P^{32} per hour (Armin *et al*, 1952). After incubation the blood is centrifuged at 3500 revolutions per minute and plasma removed along with the buffy coat without disturbing the cells. The cells are then repeatedly washed with ice cold physiological saline to remove any trapped plasma. 1·0 ml. of these labelled cells is carefully removed and mixed with sufficient plasma from the first half to prepare whole blood. 1·0 ml. of this labelled blood is injected into the antecubital vein of one side of the patient. 0·5 ml. of the labelled blood is mixed with 500 ml. of physiological saline and kept as the reference standard solution. The specific activity of the labelled blood is, therefore, 1,000 times that of the reference standard. Two samples are withdrawn from the opposite antecubital vein of the patient at an interval of 10 and 15 minutes respectively, when tagged cells are uniformly distributed within the body. Both these samples and the reference standard are measured for radioactivity. Thin films of the samples (0·2 ml.) is dried on flat copper planchets and measurement is done in a heavily shielded sample changer using an end window type Geiger-Müller counter. A more or less similar method has been followed by Mukherjee and Rowlands (1951) in measuring blood volume of dogs with P^{32}.

If V = Blood volume

C_1 = Count from sample

C_2 = Count from reference

Then $V \times C_1 = 1000 \times C_2$

or

$$V = \frac{1000 \times C_2}{C_1}$$

The blood volume measurements by dye haematocrit method has been done using Evan's blue (T-1824) following the method of Gregersen *et al* (1935).

RESULTS

Simultaneous measurements of blood volume using both the above methods have been done in 38 female human subjects.

The results of these measurements have been shown in Table 1.

TABLE 1—SHOWING BLOOD VOLUME MEASUREMENT USING P^{32} LABELLED CELLS AND DYE

Case No.	Weight in Kg.	Volume by P^{32} labelled cells in ml. (Vr)	Vol/Kg. of body weight in ml./ Kg.	Volume by dye method in ml. (Vd)	Vol/Kg. of body weight in ml./ Kg.	Ratio Vr/Vd
1	58·0	3500	60·0	4370	75·5	0·79
2	41·0	2440	59·5	3100	75·0	0·79
3	45·8	2760	60·5	3860	84·4	0·71
4	54·5	2345	43·0	2911	53·4	0·80
5	55·0	2400	45·5	3300	60·0	0·75
6	45·6	2700	59·0	3900	85·5	0·69
7	52·0	3760	72·3	4110	79·0	0·91
8	36·6	2230	61·0	2750	75·0	0·81
9	41·0	3260	55·2	3420	83·5	0·66
10	50·0	2850	57·0	4950	81·0	0·70
11	84·5	4000	47·4	4446	52·5	0·90
12	53·0	2600	49·1	3924	74·1	0·66
13	38·0	2600	68·4	3700	92·4	0·74
14	38·0	2410	63·5	3610	95·0	0·67
15	34·0	3120	91·7	3462	102·2	0·90
16	36·0	2900	80·4	3558	99·0	0·81
17	38·7	2390	62·8	3640	95·3	0·66
18	46·0	2870	62·4	3890	84·5	0·74
19	33·2	1960	59·0	2624	79·0	0·75
20	41·0	2640	64·4	3704	90·2	0·71
21	40·5	2500	61·7	3289	81·0	0·76
22	51·0	3300	64·8	3657	71·6	0·90
23	58·0	2800	48·3	4218	72·8	0·66
24	36·0	2010	55·9	2930	81·0	0·69
25	45·4	3260	71·8	4380	96·4	0·74
26	38·0	2450	64·3	3116	82·0	0·78
27	37·0	2050	56·5	2620	71·0	0·80
28	56·0	3000	53·5	4372	78·0	0·69
29	39·0	2205	56·5	3025	78·0	0·73
30	37·0	2000	54·0	2960	80·0	0·69
31	45·0	2710	60·0	3715	82·0	0·73
32	37·0	2710	73·0	3735	102·0	0·73
33	50·0	2770	55·0	3937	79·0	0·71
34	43·6	2640	60·0	3780	87·0	0·69
35	41·3	2620	66·0	4184	100·0	0·66
36	40·0	2540	63·5	3868	97·0	0·66
37	43·0	2900	67·0	3516	81·5	0·82
38	52·0	3160	61·0	4260	82·0	0·75

Mean volume/Kg. { P^{32} labelled cell method 60·2 ± 9·21
{ Dye haematocrit method 82·1 ± 11·3
Mean Vr/Vd = 0·75 ± 0·056

The volume obtained by P^{32} method and the dye method has been shown in column three and five respectively. For facilities of comparison of the volume obtained by the two methods, the volume per Kg. of body weight has been included in the fourth and the sixth column. In the seventh column has been shown the ratios obtained by the two methods with the mean at the foot of the table. The mean volume per kilogram of body weight by the two methods has also been shown at the foot of Table 1.

DISCUSSION

It may be seen from Table 1 that in all the cases, the blood volume obtained by the dye method has been higher than that obtained by the P^{32} method. Now if the two estimates agreed within the error of estimation, the ratio Vr/Vd would have been close to 1·0. It is very difficult to explain this discrepancy, but the results obtained by us stand comparable with those found by Reeve (1952).

Except in cases where carbon monoxide has been used in labelling the cells, the ratios are well below 1·0 and an agreement is found within statistical limits in the results obtained by the different labelled cell methods, e.g., radioactive phosphorus and radioactive iron. In order to explain the reason for the higher values obtained by labelling of cells by carbon monoxide, it has been suggested that some iron containing substances in the tissue, such as, myoglobin have a very high affinity for carbon monoxide and a portion of the carbon rapidly escapes from the labelled cells and as such higher values are obtained. In fact it is now agreed that the estimation of the cell volume employing P^{32} and Fe^{59} give the true cell volume (Reeve, 1952). It is not possible to arrive at the true total blood volume, due to uneven distribution of red cells and plasma through circulation which is likely to give rise to a difference between the cell concentration in peripheral blood and in total blood (Reeve, 1952; Smith *et al*, 1921; Meneely *et al*, 1947; Lawson *et al*, 1946; Fahraeus, 1929; Fahraeus and Lindquist, 1931, Stead and Ebert, 1941; Gibson *et al*, 1947). It has been explained by Fahraeus and Lindquist (1931) that the viscosity of blood varies depending on the diameter of the vessel through which it is flowing. Below a critical diameter of 0·3 mm. the variation is much more pronounced, decreasing sharply with reduced diameter. Red corpuscles flow through the axial stream and the slow marginal stream consists mainly of plasma. By this process the corpuscle suspension gets diluted while streaming through narrow capillary tubes. This change of dilution in corpuscle suspension gives rise to the changes in viscosity. It has, however, been suggested that the magnitude of the error due to this phenomenon is small and hence the cell method may be used to find out the total blood volume (Mcneil *et al*, 1951).

Alternatively the plasma volume may be determined by the dye method (T-1824) and the cell volume separately by the P^{32} method. But there

TABLE 2—SHOWING RATIOS CALCULATED FROM SIMULTANEOUS ESTIMATES OF PLASMA VOLUME BY THE DYE METHOD, CELL VOLUME BY THE LABELLED CELL METHOD, AND THE HAEMATOCRIT VALUE MADE BY VARIOUS WORKERS

(All results were calculated from the haematocrit values corrected for trapped plasma)

Reference	Number of paired observations	Labelled red cell method	Dye method	Mean uncorrected haematocrit value	Mean ratio : A/B*
Hevesy *et al* (1944) ...	8	P^{32}	T-1824	41·7	0·88
Gibson *et al* (1946) ...	40	Radio-active iron	T-1824	42·4	0·87 ± 0·056
Barnes *et al* (1948a) ...	20	Ashby	T-1824	41·3	0·88
Reeve & Veall (1949) ...	13	P^{32}	T-1824	44·7	0·87 ± 0·025
Nachman *et al* (1950) ...	40	P^{32}	T-1824	44·8	0·83 ± 0·106
Mollison *et al* (1950) ...	35	P^{32}	T-1824	54·8	0·75 ± 0·076
Hopper *et al* (1944) ...	13	Carbon monoxide	T-1824	43·2	1·02
Root *et al* (1946) ...	14	Carbon monoxide	T-1824	45·1	0·98
Courtice & Gunton (1949) ...	20	Carbon monoxide	T-1824	46·0	1·03 ± 0·041
Our results	38	P^{32}	T-1824	38·7 ± 3·2 (all female)	0·75 ± 0·056

*A = red-cell volume determined by labelled-cell method. B = red-cell volume determined by dye-haematocrit method.

are differences in opinion about the correctness of the estimated plasma volume by the use of dye (Meneely *et al*, 1947 ; Lawson *et al*, 1946 ; Lawson *et al*, 1947 ; Stead *et al*, 1941 ; Overbey *et al*, 1947). It has been suggested that immediately after injection of the dye, great losses of dye are most likely to occur in the first few circuits when the capillaries are exposed to high concentration. Further the early rapid fall in plasma dye concentration outlasts the maximum mixing time (Lawson *et al*, 1947). As a result, the plasma volume obtained by the dye method even after extrapolation is high (Meneely *et al*, 1947). On the other hand Root *et al* (1946), Barnes (1948b), Reeve (1948), Gregersen *et al* (1950) and Gregerson (1951) maintained that the evidence uptil now does not definitely show that some undetected dye escapes from plasma shortly after injection or that the dye is distributed through a portion of the lymph.

This problem may be approached from another angle. If the plasma volume is determined by the dye method and the cell volume by the P^{32} method, the average haematocrit value for the whole body may be obtained by dividing the cell volume by the sum of the cell and plasma volumes determined in this way. The mean value of the body haematocrit for the cases under study was found to be 28·5 ± 3·67. This average value may be compared with the haematocrit value found out initially by centrifugation of the peripheral blood taken from the antecubital vein which is termed the peripheral haematocrit value (Reeve, 1952). The mean peripheral haematocrit value was 38·7 ± 3·2 as mentioned in Table 2. The ratio of the body haematocrit to peripheral haematocrit was 0·75 ± 0·056. It is interesting to note that the differences in the blood volumes obtained by the two methods are in the same ratio as that between the body haematocrit and peripheral haematocrits. As explained earlier, the difference in the two haematocrits may be due to either actual difference in haematocrit value existing in different regions of the body or to an error in the assumptions underlying the two methods.

CONCLUSION

Cell volume may be determined correctly by the tagged cell method. With the present knowledge it is perhaps not possible to determine the true total blood volume. However a closer approach to the true total blood volume may be achieved by determining the plasma volume by the dye method and cell volume by the tagged cell method separately and adding them.

SUMMARY

Simultaneous estimation of blood volume has been done in 38 female human subjects employing the P^{32} tagged cell method and the dye-haematocrit method (T-1824). Mean results obtained are 60·2 ± 9·21 ml./kg. by the P^{32} tagged cell method and 82·1 ± 11·3 ml./kg. by the dye-haematocrit method. The mean ratio of the volume obtained by the two methods is 0·75 ± 0·056. Comparative results obtained by the other workers have been shown in tabular form. A conclusion has been drawn to the effect that total cell volume may be determined correctly by the tagged cell method. But to arrive at comparatively more correct total blood volume, determination of cell volume by the tagged cell method and plasma volume by the dye-haematocrit method may be helpful.

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OBSERVATIONS ON ERYTHROCYTE SEDIMENTATION RATE IN NEPHROTIC SYNDROME

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It is well recognised that nephrotic syndrome may have natural remissions and relapses. Various measures like bed rest, high-protein low-sodium diet, malaria therapy, attack of measles and administration of diuretics, cortisone, corticotrophin, cation-exchange resins, etc., have at one time or other been credited to inducing remission in this condition. Sometimes the remissions may last for months or years. Naturally one is anxious to know if the remission in a particular case is permanent and various criteria have been put forward to determine it. Permanent recovery is however very rare. Schwarz and Kohn (1935) observed 9 recoveries in 36 children with nephrotic syndrome. Their criteria of recovery were freedom from oedema, normal urine and normal blood chemistry for at least a year. Rosenheim and Spencer (1956) gave their criteria of complete remission of the syndrome as absence of oedema, a normal serum-albumin level, and proteinuria of 0·1 g. or less per 100 ml.

MATERIALS AND METHODS

We have observed 12 cases of nephrotic syndrome in Nilratan Sircar Medical College Hospital, Calcutta, and have the record of a case where there has been complete recovery. In these patients the syndrome started insidiously. It was not preceded by fever, sore throat or upper respiratory tract infection. They had oedema and oliguria. The urine contained copious amount of albumin and very few or no red cells. Serum-albumin was always diminished and cholesterol increased. The patients had high-protein low-

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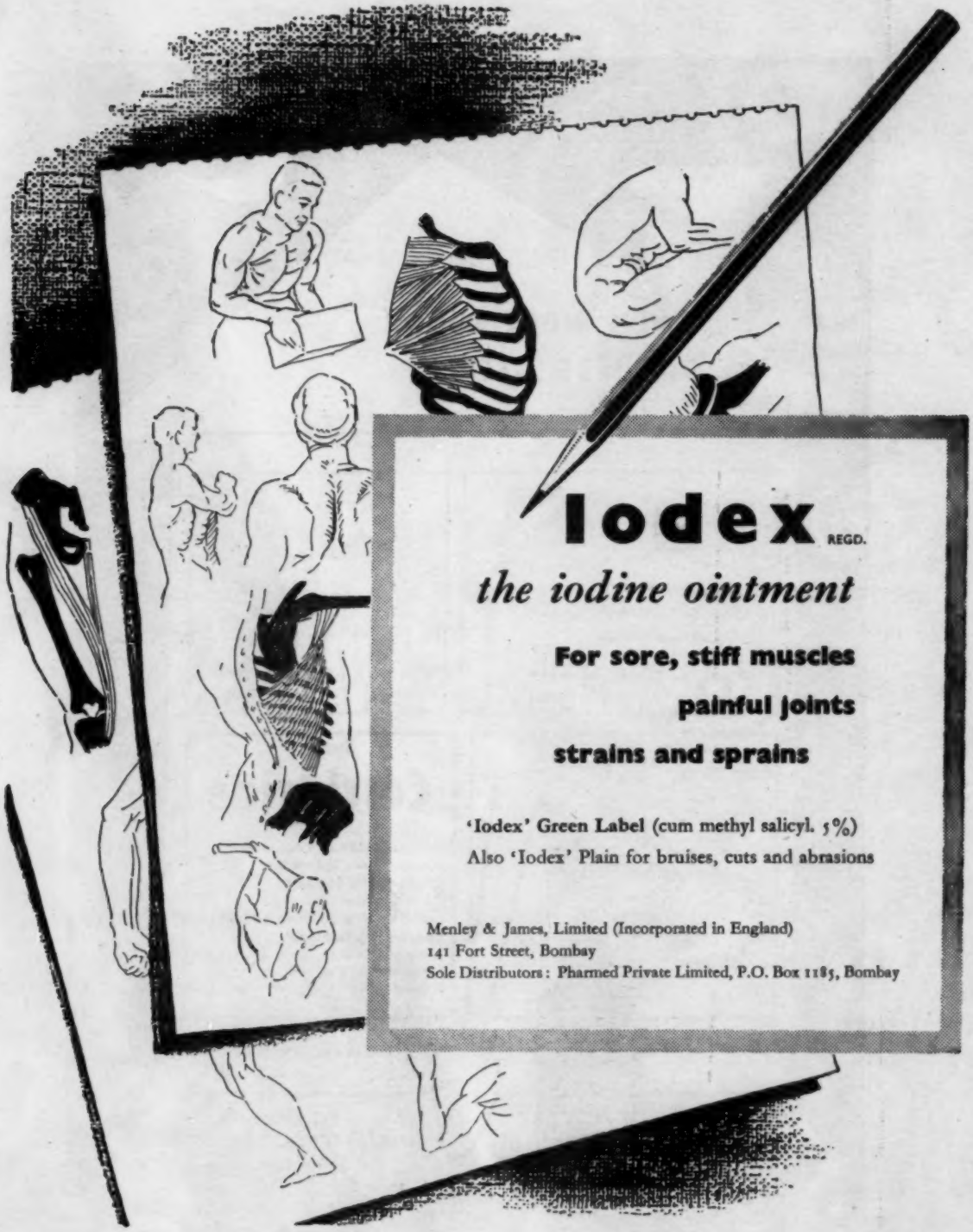
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TABLE 1—SHOWING CLINICAL FEATURES AND RESULTS OF INVESTIGATIONS

Case No., sex and age (yrs.)	Duration of oedema (months)	Date	Weight (lb.)	Blood-pressure (mm.Hg.)	Urine protein g. per 100 ml.	Serum albumin g. per 100 ml.	Serum globulin g. per 100 ml.	Cholesterol mg. per 100 ml.	Urea mg. per 100 ml.	E.S.R. mm.	Haemoglobin g. per 100 ml.	Oedema
1. M., 21	1	6-10-53	140	130/80	0·05	0·9	1·4	266	36	80	10·9	+++
		16- 2-54	114	120/80	0·05	1·8	2·2	234	46	40	10·9	+
		14- 3-54	90	135/75	0·05	—	—	—	—	19	11·6	Nil
		21- 5-56	129	135/85	0·025	3·7	4·2	222	28	40	12·3	Nil
		24- 9-56	124	140/90	Trace	3·6	3·1	130	—	100	13·0	Nil
		23-10-56	123	120/80	Nil	3·9	3·9	105	50	35	14·5	Nil
2. M., 17	2	26-11-54	114	110/70	0·3	1·1	2·4	250	28	96	9·4	+++
		20-12-54	117	110/70	0·6	1·0	1·6	333	54	100	8·7	+++
		8- 2-55	120	115/75	1·0	1·8	1·4	—	—	110	8·7	+++
3. M., 11	1	14- 1-55	54	105/60	0·6	1·9	2·3	133	44	136	10·2	++
		17- 2-55	48	105/65	Trace	3·5	2·9	111	30	40	13·0	+
4. M., 25	1	25- 1-55	170	125/85	1·0	1·4	2·6	285	30	150	8·7	+++
		22- 8-55	122	130/85	0·5	2·7	1·8	236	66	130	9·4	++
		25- 4-56	112	130/80	0·2	2·9	2·5	236	48	130	10·2	Nil
		8-10-56	115	150/90	0·2	3·9	2·6	200	54	40	10·9	Nil
5. M., 17	12	22- 3-55	102	125/85	0·5	1·9	2·2	236	30	140	10·2	++
		3- 5-55	80	130/85	0·6	2·6	4·4	250	30	120	10·9	Nil
		3- 5-56	90	140/95	0·4	—	—	—	—	126	12·3	Nil
6. M., 11	6	22- 4-55	72	110/70	0·5	1·7	2·6	285	40	78	7·3	+++
		11-10-55	60	130/80	0·3	1·1	1·9	222	80	120	6·5	++
7. M., 16	6	22-11-55	110	120/80	0·6	1·3	2·6	266	40	150	8·7	+++
		27- 4-55	110	110/70	0·4	0·9	2·7	308	34	140	12·3	+++
		13-11-56	90	128/80	0·025	2·1	3·3	94	48	35	11·9	Very slight
8. M., 9	12	5- 4-56	40	100/60	0·2	1·6	3·1	286	40	72	12·3	+
9. M., 16	7	12- 6-56	98	120/84	0·2	1·2	2·9	400	40	128	10·9	+++
		26- 7-56	78	125/85	0·15	1·3	2·9	444	24	130	11·6	+
10. M., 15	2	2-10-56	87	135/80	Nil	2·7	3·5	130	32	39	12·3	Very slight
		28-10-56	86	115/75	Nil	4·1	3·0	180	28	10	13·8	Nil
11. F., 27	7	7-10-56	90	115/75	0·25	1·5	1·9	250	46	72	11·6	++
		22-10-56	100	110/70	0·6	1·3	2·3	400	24	72	11·6	++
12. F., 55	6	7-10-56	110	140/90	0·35	1·5	2·5	333	26	76	11·6	++
		22-10-56	98	110/70	0·20	—	—	234	44	82	11·6	+

+ Slight. ++ Moderate. +++ Marked.

sodium diet. Two patients were treated with induced benign tertian malaria and one with cortisone with no appreciable results. Erythrocyte sedimentation rate was determined by Westergren method. If the reading was more than 100 mm. in the first hour, this figure was taken, otherwise half of the total of first hour reading plus half of the second hour reading was taken as the sedimentation rate in mm. per hour. No correction was made for anaemia.

Biochemical examinations of urine and blood were done by standard methods.

DISCUSSION

The determination of sedimentation rate of red cells is a non-specific test. It has, however, been usefully employed to assess the activity of diseases like tuberculosis, rheumatic fever and rheumatoid arthritis. The rate is raised in many conditions but all the factors which control the sedimentation rate are not known.

In all the cases of nephrotic syndrome observed by us the sedimentation rate of red cells was markedly increased. This finding may thus provide additional help in the diagnosis of the syndrome. The following cases will illustrate the point.

A boy, aged 12 years, was admitted in the hospital with history of jaundice for two weeks and slight generalised oedema for ten days. The urine contained 0·25 g. per cent albumin. The E.S.R. was only 2 mm. per hour. This ruled out the possibility of nephrotic syndrome. Subsequent events unfortunately confirmed the diagnosis of infective hepatitis. He died of hepatic coma.

A female patient, aged 60 years, was admitted in the hospital with history of dyspnoea on exertion for 8 months and generalised oedema for one month. Her blood pressure was 160/110 mm. of Hg. She was thought to be a case of hypertensive cardiac failure. The E.S.R. was, however, 115 mm. in the first hour. This made us doubt the diagnosis and subsequent investigations which gave the following results—haemoglobin 7·3 g. per cent, urine albumin 0·5 g. per cent, serum albumin 1·5 g. per cent, globulin 3·5 g. per cent, cholesterol 400 mg. per cent, blood urea 64 mg. per cent—suggested that the primary condition was nephrotic syndrome.

In the cases of nephrotic syndrome observed by us, the sedimentation rate of red cells remained raised as long as the usual signs of activity of the syndrome, e.g., oedema, albuminuria, and hypoalbuminaemia were present. Some of the cases who looked apparently healthy, this simple test showed that the condition was still active. Case 1 on 23-10-56 appeared perfectly healthy with no symptoms or signs of nephrotic syndrome. His urine was free from albumin, blood pressure 120/80 mm. of Hg, haemoglobin 14·5 g. per cent, but the E.S.R. was 35 mm. per hour. This suggested that the syndrome was still active. On further investigation serum albumin was found to be slightly low (3·9 g. per cent) and blood urea slightly raised (50 mg. per cent).

Case 10 on 28-10-56 had no symptoms or signs of the syndrome and the blood biochemistry and the E.S.R. were normal. We may conclude that the condition was then in the inactive stage. A male patient suffered from anasarca, and albuminuria at age of 22. He was treated in a hospital as a case of nephrotic syndrome and had the characteristic features of the condition. He became free from the symptoms and signs of the syndrome after 15 months. He had no recurrence of the condition and he is now 46 years old. We may conclude that he has been cured of the syndrome. Investigations carried out on 7-11-56 gave the following results. Blood pressure 135/85 mm. of Hg, haemoglobin 11·6 g. per cent, E.S.R. 22 mm. per hour, urine no abnormalities, serum albumin 3·5 g. per cent, globulin 4·5 g. per cent, cholesterol 80 mg. per cent, blood urea 34 mg. per cent. He had nutritional deficiency due to poor intake of protein. This would explain the anaemia, the lowered albumin content of the blood and the slightly raised E.S.R.

Erythrocyte sedimentation rate in cases of nephrotic syndrome gave a fair idea of the activity of the condition and as long as it was raised, it could not be taken that the syndrome had been arrested. No definite correlation could be found between any particular element of blood and the rise in E.S.R. It appeared that hypoalbuminaemia was mainly responsible for the rise, though the associated normal or slightly raised globulin content of serum and hypercholesterolaemia might have had some contributory roles.

Summary

Thirteen patients with nephrotic syndrome have been observed.

Erythrocyte sedimentation rate was markedly raised in all the cases.

E.S.R. remained raised as long as the syndrome was active.

It is suggested that in addition to the usual investigations like examination of urine and chemical analysis of blood, this test should be carried out to assess the activity of the syndrome.

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CASE NOTES

RHINOSPORODIOSIS IN WESTERN UTTAR PRADESH

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Rhinosporodiosis is not a rare disease as one is led to believe from the literature. The disease was first described by Seeber in 1896 in Argentina from a case of nasal polyp. The disease occurs endemically in southern provinces of India chiefly Travancore and Mysore areas as well as in Ceylon.

The aetiological agent of rhinosporodiosis is a fungus, *Rhinosporodium seeberi*, belonging to the class Phycomycetes (Ashworth, 1923). The fungus so far has not

been grown in artificial cultures and its exact mode of infection, transmission and life cycle are still not fully known. Its pathology was fully discussed by Karunaratne (1936) from Ceylon. Desmond (1952) and Andleigh (1953) have reported cases of rhinosporodiosis from South India and Rajasthan respectively.

No case has yet been reported from this part of India. The following case came under our observation recently and the diagnosis was confirmed by biopsy.

Case Report

S. C., a 17 year old Hindu male, a resident of Mathura, complained of difficulty in breathing on account of a reddish mass in his right nostril for the last three years. The patient, a school student, a vegetarian and of temperate habits, in his spare time used to help his father in the transport of sugar-cane bundles. One of his friends had similar complaint for the last four years.

On examination a reddish pink friable polyp was found arising from a wider base from the middle of the right nostril. It was opaque, of about the size of a small pea and bleeding to touch. Small white pin-point spots could be seen on the outer surface. The growth was limited to the nostrial with no visible extension to the lip or nasopharynx. Biopsy was done on 22-5-56.

Biopsy report—The surface epithelium showed metaplasia to stratified squamous epithelium, manifesting marked degree of atypical proliferation and hyperplasia. The epithelium was seen to dip down in the subepithelial tissue with an attempt to encircle the sporangia. The latter consisted of round or oval cystic spaces containing bunches of spores in all stages of development (Fig. 1, *vide* Plate). The characteristic spore was about the size of a red blood cell, containing a round to oval basophilic nucleus placed inside a vacuole in the cytoplasm. The cytoplasm was visible as a thin rim of pale pink material towards the cell wall. In some of the spores clear nucleoli could be made out. A few of the sporangia were empty of spores and instead showed the presence of a cellular hyaline or fibrillary mass. Probably this was the degenerative change after the rupture of spores. The stroma in between the sporangia was highly cellular and showed conspicuous vascularisation. There was marked infiltration of the stroma with polymorphs, plasma cells and lymphocytes. At places foreign body giant cells formed near the sporangia.

Summary

A case of rhinosporodiosis is presented with clinical history, gross findings and microscopic description.

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A RARE ABDOMINAL TUMOUR

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Myxoma (myxosarcoma) is rarely found in the retroperitoneal area. In an extensive review of literature Stout (1948) found only five retroperitoneal myxomas out of a total of 143 myxomas. These rare tumours arising from primitive mesenchyme may grow to an extremely large size and infiltrate the surrounding tissues, but they never metastasise. It would be proper to call them malignant on the basis of their tendency to local infiltrative growth and repeated recurrences. Grossly, the myxomas may be soft or firm and on cross section often have a gelatinous quality with areas of cystic change. Microscopically, stellate cells are separated by abundant mucoid material and have fine tangled reticulin fibres.

Case Report

Baby Shobha, 2½ years, was admitted to the hospital on 11-8-56 with the history of enlargement of the adbomen for the last two months. There was no complaint of loss of weight, fever or pain. No complaint of change in bowel habit or any other abnormality in stools and urine at present. There was a past history of yellow coloured urine which stained the clothing, but no yellowness of the conjunctiva or any other evidence of jaundice about one year ago. The family history was of no significance.

On examination the child was of average build and moderately well nourished. There was slight pallor of the conjunctiva, palate, tongue and nails. Small lymph nodules, discrete and firm were palpable in the neck and the axillae. The abdomen revealed fullness in the upper part. On palpation a large swelling was detected in the right hypochondrium and epigastrium extending down to about 1 finger above the umbilicus with a definite sharp lower border. Part of the swelling was more protuberant than the rest and somewhat soft in consistency, but not fluctuating ; the swelling moved with respiration and appeared to be con-

nected with the liver. Percussion of the upper border of the liver showed normal limit and the lower border extended 1 finger above the umbilicus. There was no band of resonance between the swelling and the liver dullness.

On the basis of the clinical features of the case a diagnosis of hepatomegaly was made.

In the hospital the child was given a course of chloroquine for 10 days. But it made no difference in the size of the swelling. Casoni's intradermal test was done to exclude the possibility of *Taenia echinococcus* infestation. It proved to be negative. Other investigations like liver function tests, examination of the urine and stools showed only very slight liver damage. As a plain x-ray of the abdomen showed a cystic swelling in the upper part, it was decided to do a laparotomy. This revealed a large vascular swelling. It was impossible to define its boundaries and it was considered inoperable. A biopsy was taken.

Biopsy report—Histopathology: Portions of mucoid, homogenous greyish soft neoplasm. Microscope: Myxomatous neoplasm (Fig. 1, *vide* Plate). No evidence of its origin in the liver. No definite histological evidence of malignancy, but such a tumour should be regarded as potentially malignant. It is probably retroperitoneal.

Summary

A case of rare abdominal tumour diagnosed clinically as hepatomegaly but later on found to be a myxoma, possibly retroperitoneal, on the basis of laparotomy and histopathological report.

Acknowledgments

We thank Dr. Jagdish Bhatia, Physician, Memorial Hospital, for help and co-operation in reporting this case and Mr. Surinder Nath for the microphotograph.

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LYMPHANGIOMA OF ALL THE THREE TYPES IN THE SAME PERSON IN THE SAME LIMB

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A lymphangioma is a neoplasm arising out of lymphatics just like a haemangioma arising out of blood vessels. This is much less common than a haemangioma. This is also a congenital condition like haemangioma. It usually contains lymph. This tumour is due to hyperplasia of lymphatic tissue associated with dilatation of lymphatic spaces and channels. It may or may not have communication with the lymphatic system. The commonest sites of its origin are the tongue, lip, neck and axilla. Dilatation of lymphatic vessels is called lymphangiectasis. If a true growth occurs from normal lymphatics, it is called lymphangioma. It is not possible to assess the exact aetiology in each case.

There are three types of lymphangiomata: (1) capillary, (2) cavernous and (3) cystic—all the three varieties are congenital in origin.

A capillary lymphangioma is a localised nodular tumour. It is composed of minute lymphatic channels lined by cubical epithelium and filled with clear fluid containing a few lymphocytes. Clinically, it is a firm localised nodular freely mobile tumour situated in subcutaneous tissues and mostly in the tongue and the lip.

A cavernous lymphangioma is a diffuse tumour composed of dilated lymphatic spaces intercommunicating with one another. The spaces are lined with flat endothelium and contain lymph mostly blood stained, due to haemorrhage. Clinically, it is a soft fluctuant diffuse swelling situated in the subcutaneous region.

A cystic lymphangioma is a unilocular or multilocular cystic tumour with very thin walls reaching a very large size It occurs chiefly in the neck and axilla and mostly in children under the age of ten years. Clinically it is a soft cystic lobulated huge tumour with translucency. The cystic spaces diffusely ramify both subcutaneously and deep in the muscular plane. When it occurs in the neck, it is particularly called cystic hygroma.

The following case is presented for its rare incidence and the rare combination.

Case Report

Patient Laxmayya, Hindu male, aged 20 years, ryot by occupation and a native of Hosakote, got admitted into the surgical ward of the Victoria Hospital, Bangalore, in the 3rd week of September 1955.

The patient noticed about 10 years back small swellings on the dorsum of the left hand and the left supraclavicular, infraclavicular and axillary spaces. Later on the small nodular swellings began to appear all over the left upper limb. They had been gradually increasing in size but there was neither pain nor discomfort. For the last two years, some heaviness was being felt in the left upper limb. The swelling particularly on the dorsum of the left hand used to increase in size while working. The swellings around the shoulder used to produce mechanical obstruction to movements of the neck.

ON EXAMINATION:

General—The patient was found to be a moderately nourished individual with patches of pigmentation of the skin here and there. No group of lymph glands were enlarged.

Local—1. There was a huge diffuse globular cystic swelling occupying the whole of the left supraclavicular, infraclavicular and axillary spaces (Fig. 1, *vide* Plate). The skin over it was thin and stretched. The bony prominence of the left clavicle was almost masked. Visible veins were prominently seen over the swelling. It was cystic and tense with diffuse extension without edges, measuring 5″ × 4″ on the supraclavicular space. It was fluctuant and impulse could be transmitted from one part of the swelling to the other. It was slightly warm but not tender. No emptying and no pulsation were noted. Transillumination was found positive. Diagnostic aspiration revealed clear serous fluid. It was diagnosed as cystic lymphangioma extending into three regions and taking the name of cystic hygroma for its situation in the neck.

2. There were two other diffuse swellings one occupying the whole of the dorsum of the left hand extending to the proximal half of the fingers and the lower half of the forearm (Fig. 2, *vide* Plate), and the other on the front occupying the lower third without any extension into the palm. The skin was deeply pigmented, rough and coarse. The middle three fingers could not be fully extended. The movement of the wrist joint was free. The swellings were soft, diffuse and fluctuant with feelings of leathery parchment paper, not warm and not tender and not translucent. Diagnostic aspiration revealed blood-stained fluid. X-ray picture showed osteoporosis of metacarpal and carpal bones and lower ends of the radius and ulna. It was diagnosed as cavernous lymphangioma.

3. There were multiple prominent nodular swellings of different sizes ranging from a pea to a marble all over the upper limb and, more so, on the anterior and medial aspect (Fig. 1, *vide* Plate). The skin was stretched and shiny. Visible veins were prominent on the forearm. They were firm and nodular in consistency, freely mobile in all directions and the skin was not fixed. They were neither tender nor painful. Diagnostic aspiration revealed serous fluid and the nodule entirely disappeared after the aspiration. After 24 hours, the nodular swelling reappeared and 2 or 3 days later reached its original size with all the characteristic features. The aspirated fluid showed cholesterol crystals on microscopic examination.

On 4-10-55 under general anaesthesia, the patient was operated. An oblique curved incision was made on the left supraclavicular space. The tumour with multiloculated cystic spaces surrounded by dense adhesions all round was enucleated with careful dissection. Plenty of serous fluid escaped from the wound as the dissection was proceeded with. The ramifications of the growth extending into the infraclavicular region made another transverse incision ½″ below the clavicle necessary. The further ramifications of the growth into the axillary space necessitated a 3rd oblique curved incision in the left axilla. Thus through the three incisions, the entire mass of lymphatic growth was removed by careful dissection without any damage to any important vessel and nerve. At one or two places, it was found absolutely necessary to leave behind some tissues of the growth as being densely adherent to the main vessels. All the wounds were closed with drainage.

The patient had an uneventful convalescence. He was discharged after 3 weeks with advice to come back after a few months for further treatment.

On 28-5-56, the patient was readmitted into the hospital and on 12-6-56 he was again operated on for the cavernous and capillary types of lymphangiomata under general anaesthesia. Vertical incisions were made, spongelike white tissue with plenty of enclosed network of spaces containing serous fluid was exposed in the subcutaneous region of cavernous lymphangioma. The tissue was densely adherent to both the skin and deeper tissues. There was profuse oozing of blood from the surrounding area as dissection was carried out. The capillary lymphangiomata were dissected out *en masse* without much difficulty. The whole thing looked like an oval sweet almond, was full of vascularity and firm and fleshy in consistency. When opened, it was found full of thin serous fluid.

Specimens removed were sent for pathological examination.

Biopsy report (1) "The section consists of small irregular communicating spaces and these are lined by flattened endothelium. The endothelium is supported by some plain muscle. The spaces are separated by a moderately vascular fibrous framework and the fibrous partitions are infiltrated with chronic inflammatory cells.

(2) "The section consists of small and irregular spaces which do not show any epithilial lining. Rest of the tissue shows fibroblastic tissue in which are found crowding of chronic inflammatory cells.

(3) "The section consists of fibrous tissue capsule containing underlying engorged vessels with areas of haemorrhages and infiltration of chronic inflammatory cells.

(4) "The section reveals small irregular communicating spaces which are seen to be lined by

what looks like flattened epithelium. There are islands of haemorrhages in the section and these islands and spaces are consistently lined by adult fibrous tissue and this tissue is invaded by chronic inflammatory cell."

SUMMARY

This case is interesting in the sense that in the beginning the diagnosis was puzzling. It was not so with the cystic hygroma, but with the other two types.

To postulate all the three types as text-books describe, is a matter of rare conjecture. It is really a rare occurrence of a rare combination. The cavernous lymphangiomata simulated arteriovenous shunt in appearance but lacked all its characteristic features. On clinical examination, it was absolutely impossible to think or to imagine that the nodular swellings contained fluid and were collapsible. They appeared as neurofibromata.

ACKNOWLEDGMENT

I am very much thankful to Dr. Devannaiah, the Pathologist, for his active interest and co-operation in preparing a number of sections and subjecting them to careful scrutiny and thus giving us his expert report.

MITRAL STENOSIS COMPLICATED BY MILIARY TUBERCULOSIS OF THE LUNG†

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AND

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At present a great deal of importance is being attached to the radiological appearances of the lung fields in mitral stenosis, so much so that a diagnosis of severe mitral stenosis with a normal lung architecture is held inconsistent. The various radiologic appearances of the lung fields which may occur in mitral stenosis are :

1. Obscuration of the left hilum by the enlarged main pulmonary artery.
2. Clouding of the right hilum due to enlargement of the pulmonary artery against the background of impaired pulmonary translucency. These two extend variously into the lung fields particularly in the basal zones.
3. Presence of linear shadows located mostly in the costophrenic angles.
4. Thickening of the interlobar pleural fissures.
5. Miliary haemosiderosis.
6. Calcific nodules with partial ossification, a rare late stage of haemosiderosis (Haubrich, 1954).

The association of any form of pulmonary tuberculosis, adult type pleural effusion, or miliary tuberculosis of the lung is rare. We had an opportunity to observe a case of mitral stenosis develop miliary tuberculosis of the lung.

CASE REPORT

Case 1—Mrs. A. K., 23 years, was seen on 19-7-1956 complaining of low grade fever of three months' duration. The fever had no periodicity nor was it accompanied by rigor. She also complained of breathlessness on exertion.

No relevant past history and no history of tuberculosis in the family were available.

On examination she was of average build, there was no pallor of the mucous membranes and the nails. The pulse rate was 80/minute. It was regular. The respiration was 20/minute. There was no enlargement of the glands. There were no signs of cardiac failure. The apex beat was located in the 5th left interspace 3½ inches from the midsternal line. A presystolic thrill was felt at the apex and a presystolic murmur localised to the mitral area and ending in an accentuated first sound was heard.

The pulmonary second sound was accentuated.

No other abnormal findings were noted in other systems.

A skiagram of the chest taken elsewhere on 17-7-56 showed mitralised heart and pulmonary hyperaemia most marked in the lower zones. The right diaphragm was slightly elevated with regular contour. Both costophrenic angles were obscured (Fig. 1, *vide* Plate).

The E.S.R. was 15 mm. (Wintrobe) at the end of the first hour. Haemogram was within normal limits. Blood cultures were negative.

Her temperature continued to be intermittent and she was treated as a case of mitral stenosis with subacute bacterial endocarditis, though pallor, palpable spleen, petechial haemorrhages, microscopic haematuria were all absent on repeated examination.

On 4-8-1956 the patient had an attack of generalised convulsions lasting for a very short period. There were no signs of meningeal irritation and cerebrospinal fluid findings were normal. From now onwards her general condition started going downhill.

A skiagram of the chest on 16-8-1956 revealed generalised miliary mottling, with haziness of both lung fields, typical snowstorm appearance

† Excerpts from a paper read at the Eighth M. P. Provincial Medical Conference, Nagpur, October, 1956.

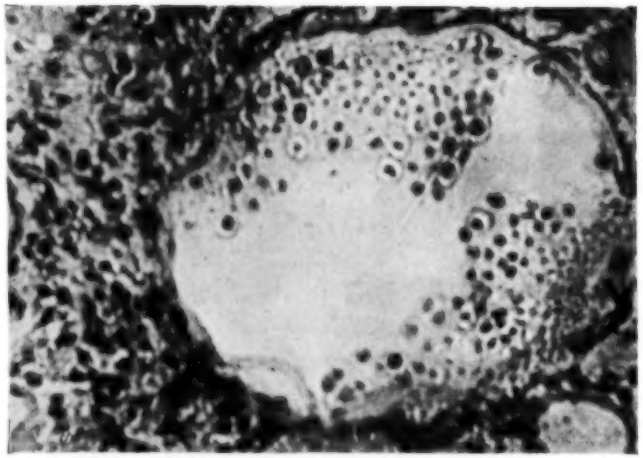

Fig. 1—Photomicrograph showing cystic space containing bunches of spores. H. & E. × 430

NAVANI AND TIAGI—*Rhinosporodiosis in Western Uttar Pradesh (p. 474)*

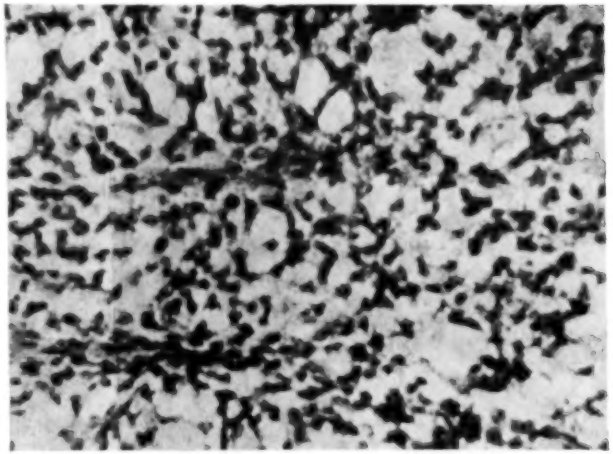

Fig. 1—Showing stellate cells separated by abundant mucoid material and having fine tangled reticulin fibres. H. & E. × 450

VAUX AND GUPTA—*A Rare Abdominal Tumour (p. 475)*

Fig 1

Fig. 2

SATHYANARAYANA—*Lymphangioma of all the Three Types in the Same Person in the Same Limb (p. 476)*

Fig. 1—Skiagram taken on 17-7-56

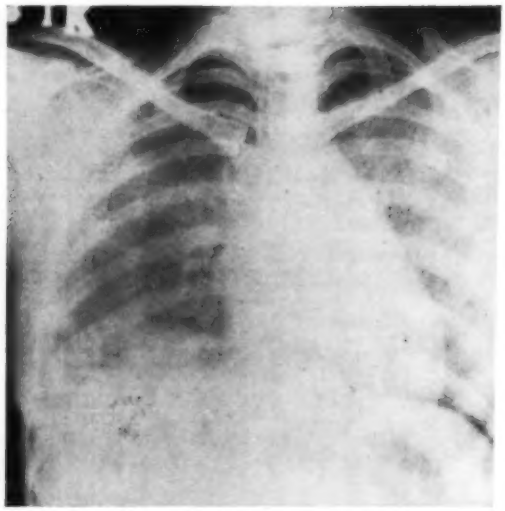

Fig. 2—Skiagram taken on 16-8-56

ROW ET AL—*Mitral Stenosis Complicated by Miliary Tuberculosis of the Lung (p. 478)*

Fig. 1A—A.P. view of vertebral spine showing calcification of intervertebral discs with osteo-arthritic changes.

Fig. 1B—Lateral view of vertebral spine showing calcification of intervertebral discs with osteo-arthritic changes.

SARIN AND BHARGAVA—*Alcaptonuria with Ochronosis (p. 481)*

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(Fig. 2, *vide* Plate). At this stage her husband produced a skiagram which was taken in April 1956 which showed marked haziness of the left lower zone with obscuration of the left costophrenic angle.

She was now put on antituberculous treatment. A few days after treatment was commenced she developed a glandular enlargement in the right side of the neck just below the angle of the mandible. The gland rapidly enlarged and softened at the centre and on aspiration showed typical caseous material. The gland healed rapidly.

Her general condition at this time was improving ; the temperature range was much lower and serial skiagrams of the chest showed clearing of the miliary shadows at the lower zones.

It is maintained that she had pleuritis left basal zone in the month of April, tuberculous in nature. Her pyrexia from the beginning was due to active tuberculous process, the existence of mitral stenosis misled us at first. At some period while she was under our observation, there was a haematogenous spread and she developed miliary mottling of the lungs and tuberculous cervical adenitis.

SUMMARY

A case of mitral stenosis developing miliary tuberculosis of the lung is described.

REFERENCE

HAUBRICH, R.—*Fortschr. Geb. Roentgenstrahlen*, **81** : 440, 1954.

ALCAPTONURIA WITH OCHRONOSIS

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Alcaptonuria is a hereditary metabolic disorder, the defect being inherited as a Mandelian recessive trait. The case reported is a typical one.

CASE REPORT

Patient M, 42 years, Hindu male, was admitted in this hospital on 25-8-1956, complaining of dull ache in the lumbar region for the last one year.

About a year back the patient started having pain of moderate intensity in the right lower leg. The pain used to continue for the whole day being more marked in the evening. There was no intermittent claudication. Three days later, he developed dull aching pain in the back also. Pain in the leg persisted for about a fortnight and then completely disappeared, whereas pain in the back continued. After a fortnight, for the first time the patient noticed that the place at which he used to pass urine became black. There was no associated polyuria, polyphagia, polydypsia or feeling of general weakness.

Past history was of no importance and none of his family members had this type of trouble. There was no history of any medication.

On examination the patient appeared, fairly well built and fairly nourished. There was no anaemia or cyanosis. There were triangular patches of light brown colour in the sclera on either side of the cornea and a slight bluish discolouration of the left external ear could be detected. The pulse was 79 per minute, without any abnormality and blood pressure was S/D 134/88 mm. Hg. Systemic examination revealed slight tenderness in the lumbar spine, beyond which nothing could be detected.

Investigations—Routine blood examination and fluoroscopy did not show any abnormality. The fasting blood sugar was 84 mg. per 100 c.c. and the glucose tolerance test was normal.

Colour of freshly passed urine was normal, but after standing it turned black throughout. When 10 per cent solution of sodium hydroxide was added to the freshly passed urine the surface layer became completely black. Benedict's reagent turned black which on standing for a few minutes gave a yellow precipitate. Ferric chloride test was positive and the urine turned the photographic paper black when the test was performed in a dark room. Thus all the usual tests for homogentisic acid were positive.

The skiagrams of the lumbar spine both anteroposterior and lateral views (Fig. 1A and B, *vide* Plate) show calcification of the intervertebral cartilaginous discs. The cartilages are thinner than normal. There is tendency to form osteophytes at the margin. The skiagrams of the chest and of larger and smaller joints of the hands did not show any abnormality.

SUMMARY

A case of alcaptonuria with ochronosis associated with the pathognomonic feature of calcification of intervertebral discs is reported.

If not kept in view this very rare disease is liable to be mistaken for diabetes as was this case in the beginning.

JOURNAL OF THE
INDIAN MEDICAL ASSOCIATION

CALCUTTA, JUNE 1, 1957

ORAL HYPOGLYCAEMIC SULPHONAMIDES

Ever since the discovery of insulin by Banting and Best in 1921 the quest for an oral substitute has been on the increase. In this country zinc jambolana[1] and *pterocarpus marsupium*[2] and a host of other indigenous drugs are being constantly experimented upon in the treatment of allaxon induced diabetes in animals and on diabetic patients with varying grades of success. The unpleasant side-effects associated with synthalin —a guanidine derivative, forced clinicians to discard it as a hypoglycaemic agent. The chance observations in Montpellier of hypoglycaemic episodes in typhoid patients treated with I P T D (p-amino benzene sulphonamido-isopropyl thiodiazole)[3] were confirmed by experiments on animals[4].

Emboldened by the above observations German workers[5, 6] in 1953 used BZ 55—a sulphanilyl-*n*-butylurea preparation with the chemical formula of $H_2N-C_6H_4-SO_2-NH-CO-NH-(CH_2)_3-CH_3$ (Blut Zucker) and marketed under various trade names—in the treatment of mature, mild and recent diabetes in sthenic individuals. This has initiated intensive and wide experimental and clinical trials in England, Canada, U.S.A. and India.

The exact mode of action of BZ 55 still remains to be elucidated. Experimental and clinical data[4, 7] suggest that the site of action is in the pancreas. It is felt that a certain amount of exogenous or endogenous insulin is necessary for BZ 55 to achieve any appreciable effect on blood sugar level in the normal or diabetic, since in depancreatised dogs or patients with total pancreatectomy or in a fully allaxonised diabetic dog the drug failed to have any effect. These observations are further substantiated by the poor or no response to the drug noticed in "total spontaneous" juvenile type diabetics, or in those suffering from the malady for 5 or 10 years, or those threatened with complications like ketonuria, coma and acidosis, all of which manifest an acute lack of endogenous insulin. Further BZ 55 is found to be of little use in the presence of infections. It was found[8] in a series of experiments *in vivo* and *in vitro* that BZ 55 stimulated beta cells of the islet tissue, reduced the rate of absorption of glucose from the gut and reduced hexose-6-phosphatase activity of the liver. The compound does not appear to increase the utilisation of glucose in the peripheral tissues, and does not possess the other anabolic activities of insulin. Some conjecture that the drug may release hypoglycaemic agents other than insulin. The view that it may depress or inhibit the production of glucagon from the alpha cells of islet tissue has since been abandoned. An ingenious explanation has been adduced[9] of the potentiating effect of BZ 55 on insulin, in that the drug destroys the insulinase producing organisms thus exerting anti-bacterial effect. This mechanism of action of BZ 55 spares insulin. This also explains the refractory nature of the drug in absolute deficiency of insulin frequently met with in young or growth type diabetes. This attractive hypothesis is subject to further criticism, by the finding of D 860 with the chemical formula

$$H_3C-C_6H_4-SO_2-NH-CO-NH-C_4H_9$$

and marketed under various trade names. It has remarkable hypoglycaemic properties with least side reactions and totally devoid of anti-bacterial effect. Thus D 860 has raised the question as to how exactly these drugs of diverse chemical structure act.

All the published reports refer to the remarkable and almost immediate hypoglycaemic effects associated with the clearance of glycosuria even within 24 hours of administration of BZ 55 or D 860 and relief from signs and symptoms of diabetes mellitus and a feeling of well-being are expressed by the patients. There is no euphoria caused by the drug. In the majority of cases an initial dose of 2·5, 1·5, 1 or 0·5 g. on the first, second, third and subsequent days, the drug controls diabetic state and in a good number of cases

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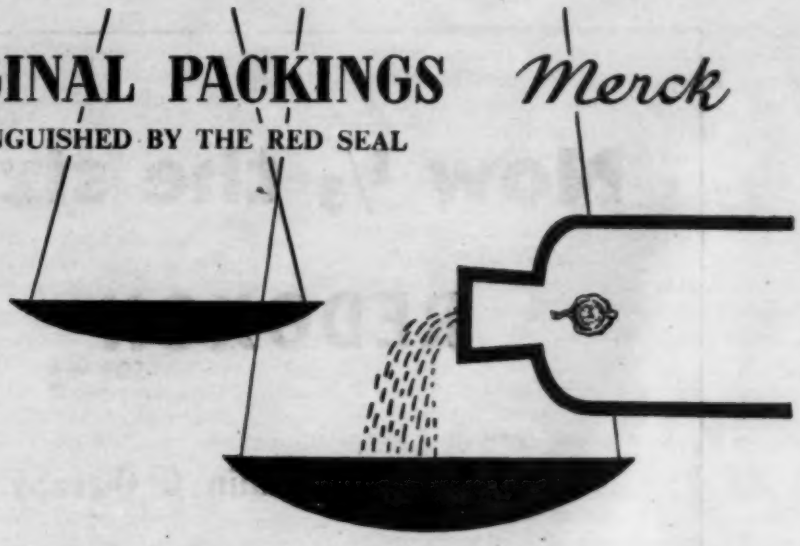

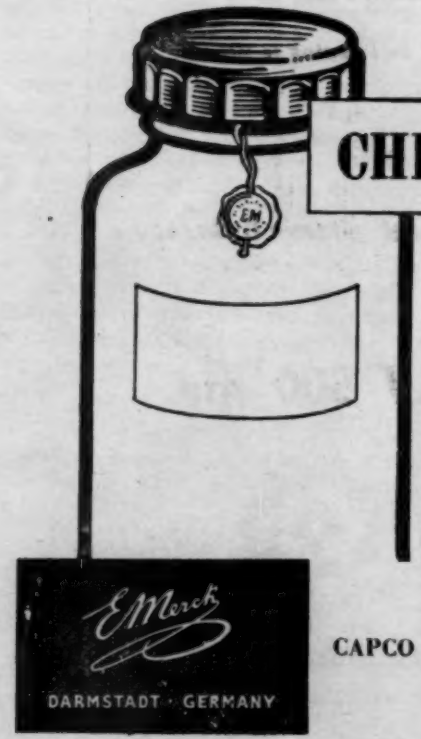

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maintenance dose is not necessary, although some have to resort to intermittent therapy. In a small number of cases satisfactory response is delayed till the seventh day of administration and a daily dose of 10 g. was used to control the malady. A quick response to BZ 55 was noticed in cases with a fasting blood sugar level below 275 mg. per cent.

British workers,[7, 10-12] on the basis of treatment of 193 cases with BZ 55 have drawn attention to the clinicians the dangers attended with long continued use of sulphonamides, specially of agranulocytopenia and thrombocytopenia associated with spontaneous purpura. These side-reactions they had observed only in a couple of their cases. Further the initial leucopenia noticed by them was of transient nature and later during the course of therapy leucocyte counts returned to normal. A similar note of warning was issued in America[13] based on the clinical trials in 11 normal medical staff and students and 7 patients. It has also been recently stressed from Germany[14] that the side-reactions of BZ 55 have been grossly exaggerated by American and British workers. It was impressed that the cases included in the latter's series for treatment with sulphanilyl-*n*-butylurea drugs were those who failed to come under dietetic control and that they needed some amount of insulin. It was further suggested[14] that susceptibility to injury of the haemopoietic system may vary with different nationals and that the American and the Britisher probably are more susceptible to damage of the haemopoietic system by these drugs. In treating 3,000 patients with BZ 55 and D 860 the German workers record 78·4 per cent of success with damage to haemopoietic system in none. It is to be noted that clinicians from our country[15-18] recorded observations similar to those of German workers though thrombocytopenia and granulocytopenia have been recorded in a case[19].

Mukherjee *et al*[20] record in this issue of the journal clinical and laboratory data of 12 patients of mature diabetes treated with a sulphanilyl-*n*-butylurea preparation. All but one case responded well to the drug and they were exempt from toxic side reactions. It is inferred that fasting blood sugar level is set at or below the renal threshold level just 10 days after treatment with the drug. Many believe that the drug does not alter the renal threshold of the diabetic. Further report by the authors with regard to withdrawal effect of the drug and also the prolonged action of the drug on different systems are eagerly awaited.

The available information on the indications and mode of action of the sulphanilyl-*n*-butylurea drugs in the treatment of mature type of diabetes poses several problems. Diabetes mellitus, although a distinct clinical entity, may be a manifestation of single or multiglandular derangement and presents itself in a variety of clinical patterns with varying grades of severity in the juvenile and the middle aged, not infrequently associated with complications and infections. This naturally raises the most pertinent question of sorting out the suitable case for oral hypoglycaemic sulphonamide therapy. These cases necessarily must be frequently seen by the physician for a check-up and any complications detected or threatened be averted.

Till more is known regarding the exact mode of action of these drugs it is safe to adhere strictly to the indications suggested by Mellinghoff[21]. Meanwhile clinicians may use the drug with caution when indicated and be on the look out for side-reactions and also for any ketonuria. Since the maintenance dose is often in the range of 0·5 g. a day, the recommendation of the American Heart Association on the use of sulphonamides continuously for five years for rheumatic fever, may hold good in the case of diabetes also. In case leucopenia, agranulocytopenia, thrombocytopenia, or rash arise in BZ 55 therapy, it is better to switch on to D 860. The danger of beta cell stimulation by the continued use of BZ 55 to complete exhaustion needs to be borne in mind in case this view is further substantiated by experimental proof.

Let us hope that the challenge thrown to the synthetic chemists for the production of an innocuous hypoglycaemic agent will in the very near future yield fruitful results. This will throw more light on the metabolism of diabetes.

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CURRENT MEDICAL LITERATURE

X-ray Therapy of Puerperal Mastitis

BOETTGER AND RUMPHORST (*German M. Monthly*, **1** : 369, 1956) from a report of 535 courses of treatment in puerperal mastitis during the period 1948-54 observe.

Mastitis after child-birth has recently shown an increased incidence again. Antibiotics often fail to cure it. X-ray treatment was used in 535 instances (439 patients). 389 cases (72 per cent) healed spontaneously. Incision was necessary in only 146 cases. Best results were obtained when mastitis developed in the first 10 days of the puerperium (84 per cent spontaneous cures). When mastitis developed at a later stage, incision was necessary in about 40 per cent of cases, despite x-ray treatment. The treatment usually consisted of the delivery of 150 r (surface dose) in one or divided sessions. Higher doses did not improve the result.

Monilial Vaginitis

JENNISON AND LLYWELYN-JONES (*Brit. M. J.*, **1** : 145, 1957) from an analysis of a clinical trial of nystatin in the treatment of monilial vaginitis observe :

Of 53 women with monilial vaginitis treated with a new vaginal pessary containing 100,000 units of nystatin, 47 (88 per cent) were free from infection one week after treatment, whereas of 36 treated with gentian violet, only 17 (47 per cent) were cured.

Out of a group of 18 who had not responded to gentian violet, 16 were cleared with nystatin.

In the patients seen four weeks after treatment the relapse rate was 46 per cent and 21 per cent respectively in the gentian violet and nystatin treated cases. No side-effects or local discomfort occurred with nystatin, whereas six of the women treated with gentian violet had a reaction which made it necessary to stop treatment.

One patient was treated with oral nystatin only, with an apparent cure.

Serum Gamma Globulin in Childhood Tuberculosis

ZITRIN AND OTHERS (*Am. Rev. Tuberc.*, **74** : 15, 1956, Ref. *Abst. World Med.*, **21** : 14, 1957) from the study of serum globulin level in 18 children with various forms of tuberculosis observe that the level is raised in active tuberculosis. Serial determinations showed that in children with a low serum gamma-globulin level initially (presumably due to inefficient antibody formation) the prognosis is poor unless there is a subsequent rise. In children in whom the serum gamma-globulin level is raised initially improvement in the clinical condition is accompanied by a return to normal values.

Children with low serum gamma-globulin levels should reveive more intensive antituberculous therapy, possibly with the addition of large doses of gamma globulin, as given in cases of agammaglobulinaemia.

Moniliasis following Antibiotic Therapy in Children

FA-PEN AND CHUN-PEI (*Chinese J. Pediat*, **8** : 12, 1957) in giving a clinical analysis of 45 cases of moniliasis in children treated with antibiotics observe :

Among the reports of moniliasis following the extensive use of antibiotics in treating a number of infectious diseases pulmonary moniliasis was considered most fatal. So far the authors have not found moniliasis in children reported in the Chinese literature.

From March 1955 to May 1956 the authors encountered 45 cases of moniliasis following antibiotic therapy among the patients admitted to the pediatric wards of college hospitals clinically analysed as follows :

The extensive use of antibiotics in pediatric therapy frequently resulted in the development of pulmonary moniliasis complicating the primary disease, especially bronchopneumonia.

The incidence and fatality rate of secondary moniliasis varied with the age and health of the diseased children. It occurred more frequently with a poorer prognosis among patients under 2 years of age and those in poor health. Cases of pulmonary moniliasis complicating bronchopneumonia were more serious.

Those cases following the prolonged use of several antibiotics at the same time, including particularly aureomycin and/or chloromycetin, developed pulmonary moniliasis more frequently and had a worse prognosis.

Forty-two cases in the series exhibited fever, 39-40°C. Besides the primary pneumonic lesions, chest x-ray examination of some cases showed new patches of hazy shadows in different portions of the lung fields.

Throat swabs of the 45 cases all exhibited growth of *Monilia albicans* repeatedly in Sabouraud's media. The macroscopic and microscopic changes were pathognomonic for moniliasis. Cultures of the lung tissues in Sabouraud's media showed growth of *Monilia albicans*.

When antibiotic therapy was discontinued, the clinical manifestations usually subsided. Six fatal cases were found in those in which antibiotic therapy was not suspended.

The authors offer the following suggestions :

Only after due consideration of the indications for treatment should one prescribe the necessary antibiotics. Unless the need is most urgent, it is better to use not more than one antibiotic preparation at the same time.

In treating infections with antibiotics, the possibility of moniliasis should be suspected when (a) the original fever of the primary disease obstinately persists, (b) progressive rise in temperature, (c) the recurrence of fever after defervescence, or (d) the worsening of the general physical condition in spite of disappearance of fever.

Thrush, if present, is usually the premonitory sign of the so-called secondary monillasis of the respiratory tract and lungs. Throat swabs for culturing Monilia should be repeatedly performed in suspicious cases.

When antibiotic preparations are used, large doses of various synthetic vitamins especially vitamin B complex, should be administered.

Moniliasis will usually clear up spontaneously, if antibiotic therapy is discontinued early enough.

Comparative Study of Treatment of Renal Tuberculosis

HOHENFELLNER AND LORBEK (*Tuberkulosearzt*, **10** : 211, 1956, Ref. *Abst. World Med.*, **20** : 260, 1956) observe that of 66 cases of renal tuberculosis seen at the 2nd Surgical Clinic, University of Vienna, during the last

17 years 45 were treated in the pre-chemotherapeutic era (1938-48) and 21 in the period 1949-54. In the earlier period 37 patients underwent unilateral nephrectomy and 8 were treated medically; of the former, 17 were cured, 5 were not cured, 9 died, and 6 were lost to follow-up while of the latter, 2 were cured, 4 died, and 2 could not be traced. In the more recent period, of 15 patients subjected to nephrectomy and chemotherapy, 13 were cured, one was not benefited, and one died, while of 6 treated by chemotherapy alone, 5 were cured and one not. Thus the over-all probable cure rates in the two periods for treatment with and without nephrectomy were 42 and 86 per cent respectively.

Partial nephrectomy was not employed, the authors' reasons against it being that with good drainage of the upper pole it is unnecessary, that when radiological evidence is negative the presence of foci may be demonstrated histologically, and thirdly that no long-term results of the operation are as yet available. Reserving streptomycin for preoperative treatment, the authors gave a 4-week course of 10 to 15 mg. of isoniazid per kg. body weight daily (divided in 4 doses), alternating with a 4-week course of 8 to 12 g. of PAS combined with 1 to 1·5 mg. of "conteben" (thiacetazone) per kg. body weight daily.

Cancer and Achlorhydria

BREAKSON AND OTHERS (*Proc. Staff Meet. Mayo Clin.*, **31**: 583, 1956) basing on a 15-year follow-up of 1,058 patients with achlorhydria 221 of whom had also pernicious anaemia and whose ages ranged from 30 to 59 years, write that it seems not unreasonable to accept the presumptive conclusion that in persons with low gastric acidity or pernicious anaemia the probability of occurrence of gastric cancer is greater than in persons with normal acidity. Whilst the 15-year survival rate was little different from the expected rate, except in the case of males with pernicious anaemia, the number of deaths from carcinoma of the stomach was appreciably higher in the achlorhydric group. The number of deaths from this cause was 26, compared with an expected number of 4·5. In the case of the patients with achlorhydria without pernicious anaemia the number of deaths was 18, compared with an expected number of 3·4, whilst in the case of those with pernicious anaemia the number of deaths was 8, compared with an expected number of 1·1. The record number of deaths from carcinoma of the stomach comprised 13 per cent of the total deaths, whereas the expected rate was only 2·3 per cent.

Sex Hormone in Advanced Mammary Cancer

LEWISON AND OTHERS (*J.A.M.A.*, **162**: 1429, 1957) give in the following lines the summary of their observation on the treatment of advanced mammary cancer with sex hormones:

One hundred thirty-three patients received 223 complete courses of sex hormone therapy for advanced mammary cancer. The choice between oestrogen and androgen was made principally in relation to the physiological age of the patient in reference to her menopause. Oestrogens were used only after five years had passed since the menopause, whereas androgens were found to be useful in both premenopausal and postmenopausal patients. In the definitely older patients, oestrogen appeared to be the hormone of choice.

A favourable objective response occurred with oestrogen therapy in 40 per cent of patients with primary tumours, 31 per cent with soft-tissue lesions, 32 per cent with visceral lesions, and only 17 per cent with osseous lesions. Both stilboestrol and ethinyl oestradiol were found to be superior to chlorotrianisene (TACE) in oestrogen therapy. A favorable objective response occurred with androgens in 27 per cent of patients with primary tumours, 23 per cent with soft-tissue lesions, 15 per cent with visceral lesions, and only 11 per cent with osseous lesions. There appeared to be no significant difference in objective therapeutic effectiveness between the several androgens used. The optimum dose of testosterone propionate was 50 to 100 mg., given intramuscularly three times weekly. Complete or partial relief of pain occurred in 52 per cent of the patients treated with androgens and in 51 per cent of those treated with oestrogens. Stanolone appeared to be superior to testosterone propionate in the subjective relief of pain. A sense of well-being occurred in 48 per cent of the patients treated with androgens and in 44 per cent of those treated with oestrogens.

Although the sex hormones are certainly not a "cure" for advanced mammary cancer, in the total care of this disease they do offer profound and gratifying benefits for patients beyond the scope of surgery and radiotherapy. Whereas "severity is allowable when gentleness is in vain," it has been our practice to make full use of the initial palliative benefits of hormone therapy before considering the more drastic operative procedures such as adrenalectomy or hypophysectomy.

Surgical Treatment of Oesophageal and Gastric Varices

CHI-HO AND OTHERS (*Chinese Med. J.* **74**: 359, 1956) in a preliminary report on the surgical treatment of acute massive haemorrhage from oesophageal and gastric varices associated with portal hypertension observe:

Eight emergency operations of transgastric ligation of varices at the fundus of the stomach for acute massive haemorrhage from oesophageal and gastric varices associated with portal hypertension are reported. The results are sufficiently encouraging to warrant its recommendation as a life saving procedure in such cases of acute massive haemorrhage. There was one death.

The rationale of this emergency procedure is to salvage those desperate bleeding patients so that they may undergo portal systemic shunting operation later.

The success of this procedure is due to the fact that ligation of the varices at the fundus of the stomach will sufficiently reduce the high portal back pressure transmitted through the portal tributaries so that haemorrhage may be arrested.

Because of the severe nature of bleeding, the rate of blood replacement before and during operation and the special routine for observing such cases pending operation are emphasized.

An upper abdominal incision in this operation is recommended. The operative procedure is briefly described. The spleen should be preserved for a later splenorenal shunt operation.

Traumatic Chylothorax

YUNG-CHIH AND CHUNG (*Chinese Med. J.*, **74**: 349, 1956) give in the following lines the summary of their observations on two cases of traumatic chylothorax.

Two cases of traumatic chylothorax are reported. One was cured by ligation of the thoracic duct through left thoracotomy, decortication of the lung and partial thoracoplasty. The other case was treated by conservative measures including intravenous reintroduction of chyle with satisfactory result.

Surgical ligation of the ruptured thoracic duct is indicated when conservative treatment including repeated thoracenteses or continuous closed drainage, dietary and other measures prove unsuccessful. It should be performed before the patient's condition is so extreme that major surgery is contraindicated.

Ligation of the thoracic duct in any part is proved practicable both clinically and experimentally. It is a rational procedure in the treatment of traumatic chylothorax.

Surgical approach for ligation of the thoracic duct is discussed in detail. The authors are of the opinion that the proper approach to the thoracic duct is through the side of the chylothorax.

A fat meal administered several hours before operation may facilitate discovery of the site of injury of the thoracic duct.

Intravenous administration of chyle is practicable only in selected cases.

Anaemia in Pregnancy

DAVIDSON (*Practitioner*, **178**: 161, 1957) in summarising his observations writes:

As anaemia results in considerable maternal morbidity the causes should be sought and corrected.

An anaemia found during pregnancy can be either a pre-existing anaemia possibly aggravated by pregnancy, or an intrinsic anaemia induced by the physiological demands of pregnancy outweighing the uptake of essential materials and necessitating diversion of these from the woman's own blood-forming tissues.

The anaemia of pregnancy is mainly an iron-deficiency anaemia. The 'physiological anaemia', due to simple haemodilution, is a doubtful entity. Severe anaemia endangers the woman's life in labour, lesser degrees add to her household difficulties during pregnancy and if left untreated predispose to severe chronic anaemia. It is therefore important to see that women are well nourished and properly cared for during their pregnancies.

As clinical assessment of all but the severe degrees of anaemia is difficult or impossible, screening by a haemoglobin estimation at the 32nd week should be included in the care of all pregnant women. Any anaemia of clinical importance is likely to be present by then and there is still time to treat those women who are found to have a haemoglobin level below 12 grammes per 100 millilitres (80 per cent Haldane). The giving of iron and other tablets indiscriminately at clinics is a poor alternative.

In a small number of women the anaemia does not respond to oral iron treatment. The majority of these have some absorptive defect and respond to parenteral iron. A minor group are iron refractory and some of these can be attributed to toxic complications such as urinary infections.

In a minor group, 1 to 2 per cent of all cases, the anaemia is not due to iron deficiency. The most important of these anaemias is the megaloblastic anaemia of pregnancy. If missed this can have serious consequences for the mother. The diagnosis may be suspected from the peripheral blood, but it should be established by a bone marrow examination before folic acid treatment is started.

Very rarely the anaemia is found to be of a haemolytic type and this may recur in subsequent pregnancies.

Almost equally rarely pregnancy occurs during the course of other anaemias, pernicious anaemia, chronic haemolytic anaemia, and the anaemias of other haematological conditions including leukaemia. The problem is then the underlying disorder.

Physiologic Basis for the Treatment of Pre-eclampsia-Eclampsia

DE ALVAREZ (*Obstet. Gynec.*, **8**: 110, 1956, Ref. *J. Obst. Gynaec. Brit. Emp.*, **63**: 94, 1956) writes that in the normal non-pregnant individual the glomerular filtration rate of the kidneys approximates to 125 ml. per minute which amounts to 180 litres per day. During normal pregnancy, a gradual increase in filtration occurs. By the ninth month the rate has increased from 50 to 75 per cent above the normal non-pregnant level but returns to pre-pregnant levels at term. In patients with pre-eclampsia or eclampsia a marked reduction in the glomerular filtration rate occurs, often to levels of 60 ml. per minute or even lower, probably due to vasoconstriction. In severe cases, the vasoconstriction causes nephron damage which is evident by proteinuria. The blood supply to the tubules is also impaired so that they also are damaged with the result that reabsorption through them is greater. As a result, not only do oedema and hyperkalaemia occur, but also azotaemia.

Treatment of toxaemia should therefore include confinement to bed which permits no fluctuation of urine excretion. The diet should be low in sodium and high in protein. Neither dehydration nor over-hydration should be used: the fluid intake should be based on the anticipated total output—that is, the urinary output of the previous day plus 1,200 ml. The patient with toxaemia may suffer from electrolyte excess, particularly as regards the sodium ion, but treatment may, if not watched, produce a depletion of some electrolytes. There is no evidence that phenobarbitone affects renal function and it is therefore the sedative of choice. The combination of hydralazine and Rauwolfia in the severely ill patient improves renal function as well as lowers the blood pressure. Of the diuretics, ammonium chloride, when properly used, is very effective. Dextran is useful in anuric patients requiring maintenance of blood pressure. Digitalis is utilised in those with heart failure. Oxygen should be given in cases of cyanosis, dyspnoea and tachycardia.

The author states that most maternal deaths due to this condition result from fluid and electrolyte imbalance.

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CURRENT TOPIC

ALL-INDIA CONFERENCE ON INDUSTRIAL MEDICINE, 1957

Dr. P. K. Ghosh, presiding over the 8th Session of the All-India Conference on Industrial Medicine held at Calcutta in April last, dwelt amongst other subjects on the following :

Till the very recent past, we used to talk of industrial medicine—treatment and prevention of diseases peculiar to industries. Concepts are fast changing—and the human horizon is continuously expanding. Today we talk of industrial health, and not of industrial medicine—we work to maintain and promote the health of all workers—men and women, young and old—in industry, in mines, in agriculture and plantations. It is not enough to diagnose and treat diseases which may afflict men because of their work—but the search begins much earlier and over a much wider field—in fact it aims at covering every sphere of human activity—his physic, his mind, his social behaviour. Not long ago I had the good fortune of attending a forum on international industrial medicine in Naples, in 1954. Many of the nations attending the Conference had an industrial medicine service—its scope was limited to giving medical relief to men and women while they were at work inside the factory. Some one suggested that conditions at home did influence the working capacity of the individual in the factory—and therefore medical facilities should be extended beyond the factory walls into the homes of the workers—a logical conclusion. But most of the members considered that this suggestion was too ambitious for the moment. In India the Government has recently introduced the rudiments of curative medicine in the homes of the factory workers, leaving a blank for the factory. The industries have a medical service for the factories only—in a few instances as in the big jute industry in Bengal, medical facilities are available both inside the factory and in the homes. With the introduction of the ESI scheme the industrialists are closing down their medical facilities inside the factory. It is a retrograde step and will act as a boomerang to industries.

From the dawn of human history, the workers' fate has been a dismal picture. In the old days there were only two classes of men—one sweated, who lived on crumbs and without shelter and perished in agony—the other who flourished and lived luxuriously by the sweat of the other. Later when steam was invented and machines patented, workers toiled chained to places of work—they toiled till their muscles ached and body panted. Gradually the scene began to change towards the end of the last century. Man is triumphing over machines—human values are being recognised. Conditions of work have improved—hours of work have been reduced from 126 hours a week to 48 or 40 hours a week. Attention which was formerly riveted on machines, now turned to the human machine—to his fatigue, his physical ailments, his mental state—to his environment in the factory and at home. The struggle of the twentieth century has been the emancipation of man from the machine—the realisation that man's happiness and joy are million times more valuable than all machinery put together—and that machines are created to lighten the burden of human labour and not to ensnare him in the stifling embrace of depravity and total destruction.

With this change in emphasis on human values, medicine has also changed. Today medicine is not content with treating the disease—but wants to prevent the disease—not only of the physique, but also of the mind. That human ingenuity is not static but dynamic is borne out by the fact that preventive medicine has been replaced by social medicine. Industrial medicine today is not merely a tabulation of occupational diseases, but industrial medicine is part of this new social medicine—it is the maintenance and promotion of health and prevention of accidents and occupational diseases. There has been a renaissance—a rediscovery of the old Chinese adage that doctors should be paid only when men are healthy.

Health Service in India

Let us for a moment turn to conditions of health care in India. Everybody will agree that it is poor—health education is nil, and health care is inadequate. Attempts are now being made to improve the position effectively and quickly. The health of the worker in this country has been looked after in many big and organised industries, much better than that of the average villager and the poor town-dweller. Industrial medical service has been developed on the initiative of industry, in many cases European. The State medical service also developed, but functioned more perfunctorily specially for the lowest income group, and for workers in the remote countryside. The latter remarks also applied to smaller industries which were much too numerous. The State-sponsored Employees State Insurance Scheme is a positive step forward and has conferred benefits on many millions of workers who did not receive them before. But the Scheme has not visualised integration of the excellent medical services existent today in many big industries. Some of the latter are being withdrawn and liquidated—why not stop it? In these days of co-existence and co-ordination, why do not the private and public sectors thrive side by side as they are supposed to do in other fields of human activity?

Industrial Health Service *vis-a-vis* ESI Scheme

I shall now return to the particular field in which our interest lies. Our Society had earlier welcomed the introduction of the ESI Scheme by the State as a forward step in the health programme of our country. But the State, either in a fit of forgetfulness, or, afraid to alienate big interests did not mention a word about existing health services in industry. Many industries, big, medium and small, closed their excellent health services and threw their men completely at the mercy of the ESI Scheme. Our Society had foreseen this danger and protested against this random withdrawal of medical facilities. It emphasised the role of industrial medical officers in the promotion and maintenance of health of the workers, pre-employment examination and periodic health check-up, job placement and rehabilita-

tion of crippled workers, preventive medicine and so on. After personal discussion and exchange of notes the Government of India ultimately accepted the stand taken by the Society, and *conceded that industrial health service was necessary and that the ESI Scheme was merely complementary to the former and could not replace it* (*vide* Circular dated 22nd April 1955 from the Ministry of Labour, Government of India, New Delhi, to various employers' organisations, and published also in our journal, *Proc. Soc. for the Study of Industrial Med.*). In this Circular it is further stated that on the implementation of the ESI Scheme Government feel it necessary, however, to reiterate that the scheme does not in any way reduce or limit the usefulness of industrial physicians and that *it will be to the considerable advantage of industry to continue and even strengthen services of the existing medical personnel.* The Society's stand was fully vindicated—but its success was partial. As this service was not made obligatory but voluntary, in many instances the industries have closed down their medical services. Our Society has appealed in vain against this unsocial action and retrograde step. Several of our members have been discharged from service with one month's advance salary in lieu of notice, after 15, 10 and 5 years' meritorious service. The noble profession has been obliged to suffer nobly!

The planners of the ESI Scheme did not perhaps visualise the continuance of the industrial health service after the introduction of the said scheme. They therefore forgot to forge a link between the ESI doctors and industrial medical officers. The result has been confusion, chaos, and unnecessary hardship for the patient, under the Scheme. To give the full medical benefit to the patient, there must be close understanding and amity between the two doctors—no bossing by one over the other, meant or unmeant. There are two systems in the ESI scheme—one, panel in Bombay and Calcutta—the other, service system in other areas. Out of 667 medical men in the panel system in Calcutta and Howrah area there is hardly one per cent who had worked previously in industries. The hope held out earlier that panel system would provide jobs for doctors displaced from industries has proved to be a myth.

Dale Committee

Even after National Health Service was introduced in U.K., the Dale Committee reported that the existing industrial health services were most important to industry in spite of the National Health Service, and the Committee advised that the former should be maintained and encouraged to expand. The experience of another seasoned Welfare State in the Commonwealth of Nations puts in bold relief and better relief that the industrial health service in our country should also be strengthened and expanded.

Rehabilitation

Rehabilitation today is an important item in industrial work. In the past a person declared as tuberculous was given a discharge immediately. Today he is treated, cured and returned to work. So also are the 'epileptic', the cardiac and the injured. The ESI doctor treats them when they are ill and/or injured. The industrial medical officer will rehabilitate and watch them.

Psychology of the Worker

No less important is the mind of the worker. Not only his economic needs have to be satisfied, but also his creative genius and his ego. He may be at conflict with his family at home—but this will be manifested in his work in the factory—he may be in conflict with his fellow worker, or even with himself—a conflict between his own conscious and subconscious minds. The modern craze for speed and lack of relaxation make him taut—liable to neurosis and psychosomatic disturbances. The industrial medical officer has a responsible role to play. The diverse needs of the modern worker make industrial health service indispensable. The busy curative doctor cannot cope with his needs.

Lack of Industrial Health Service in Second Five Year Plan

I have tried to cite a few instances to emphasise the importance of industrial health service in the modern age. Curiously this important aspect of welfare service has escaped the attention of the planners of our Second Five Year Plan. There has been very great stress laid on industrial development in the country during this plan period—but there is no mention to develop industrial health service to keep the men manning the machines fit to reach the target. An anomaly, which needs revision!

Amendments of Factories Act

I shall now refer to the Factories Act, 1948. Section 45 (3) (Amendments of Factories Act) lays down that in every factory wherein 500 or more workers are employed, there shall be provided and maintained an ambulance room in charge of a qualified medical practitioner assisted by at least one qualified nurse and such other staff as may be prescribed. There is no mention whether the medical man should be whole-time or part-time. I feel that this post of Medical officer should be whole-time, and the Act should be suitably amended. For part-time work, salary graded according to hours of work per month on the basis of remuneration and terms of service for British Industrial Medical Officers may be fixed upon. There is *no security of service for medical men* as I have illustrated above. The Welfare Officers have much better security (W. B. Factories (Welfare Officers) Rules 1950)—their appointment and dismissal are reportable to the State Government. In the Industrial Disputes Act 1956, the definition of "workman" is enlarged to include supervisory and technical personnel whose emoluments do not exceed Rs. 500/- per mensem. Under the enlarged definition of the "workmen" compounders and nurses would be regarded as workmen, but the doctors are excluded.

Study of Industrial Health

As industrial health service is assuming an ever-increasing role in the lives of a significantly increasing

number of people, its *importance in undergraduate medical study needs to be stressed.* Visits to industries by undergraduate medical students, and integration of broad principles of industrial health with Social Medicine should be undertaken. In post-graduate study the teaching of D.I.H., should be broadened and clinical cases made available to students. It is also a moot point whether D.I.H. should merge with D.P.H. or remain a separate entity. Doctorate degrees in industrial hygiene as Ph.D. or D.Sc. should also be instituted.

Research

From reports available one finds that a sum of Rs. 1,77,000 per annum is now being spent by the Indian Council of Medical Research for various researches and enquiries on industrial health. There is no liaison between the Medical Research Council and the Society or its members on research projects. Can there be no such liaison and collaboration? After all, field workers are best suited for such projects. And such joint enterprise in the field of research will raise the tempo and standard of work, and stimulate research in industry.

Indian Medical Association

What should be the relation of the Society with the Indian Medical Association? Should we disintegrate and merge body and soul with the IMA. No, we prefer to continue our separate existence, but at the same time we want to maintain a very close link with the Association. Is it possible for the Association to forge a link with us—we desire it. We desire that in matters of industrial health the IMA should consult us—there may be a joint body on industrial health with members elected both from the Society and the Association,—the Secretary of this Committee being a representative from the IMA and the Chairman from our Society or *vice versa.* In the Central Executive Committee of the IMA, there may be two representatives from our Society. We should work together, and the possibilities of such collaboration should be explored afresh.

International Societies

Science has annihilated distance, and nations are coming closer every day. Problems have ceased to be regional or national—they are becoming international. We want to exchange our notes, clinical observations and experience with similar bodies outside India—we want to check our data by the most technically advanced countries. To that end we try to associate ourselves with international bodies. We have sent delegates to the European Congress on Occupational Health in 1954, to the Association of British Industrial Medical Officers in London in 1956 and to the Asiatic Conference on Occupational Health in Tokyo, also in 1956. We intend also to send delegates to the International Congress in Helsinki this year. I do want world link, but I want to emphasise that our work is amongst our own people among whom there is so much squalor, want and disease.

NOTES AND NEWS

The World Medical Association

In fulfilling one of its objectives, namely, "to present the views of the medical profession to the World Health Organization" and other appropriate bodies the World Medical Association representing 700,000 doctors of the world, had a delegation at the 10th World Health Assembly headed by Dr. Jean Maystre, Official Liaison Officer of The World Medical Association to the World Health Organization when it convened in Geneva, Switzerland on May 7, 1957. Dr. Louis H. Bauer, Secretary General of the Association and Dr. Rolf Schloegell, Secretary of its Social Security Committee were members of the delegation during the opening week of the Assembly. Additional representatives of the World Medical Association at the Assembly were selected by the Council in its 29th Session in Oslo, Norway, April 29 to May 5, 1957.

The Council of The World Medical Association expressed its keen interest in presenting the opinion of the doctors of the world at the Technical Discussion of the Health Assembly as the topic was "The Role of the Hospital in the Public Health Programme."

A Council committee of The World Medical Association prepared a paper on its findings on the subject entitled "The Practising Doctor's Evaluation of the Role of the Hospital in the Public Health Programme" which was transmitted to the World Health Organization. This document stresses the following points:

Health care is an undertaking requiring a team approach,—the team to be composed of doctors, dentists and their ancillary personnel as well as certain agencies such as professional organisations, voluntary and official health agencies, social welfare agencies and government. The prime consideration in the whole programme is, or should be the public.

The general practitioner is the doctor best qualified to offer continuity of health care. He should have free access to the hospital to continue the patient's health care and to provide him with the opportunities of continuing medical education provided through hospital meetings and research.

A hospital is an institution and cannot replace an individual or group of individuals without medical care becoming depersonalised and mechanical.

The hospital achieves and holds its reputation almost exclusively by virtue of the reputation of its staff. Hospitals cannot function without doctors. Doctors cannot practise modern scientific medicine without hospitals.

One of the first questions to be answered is: *Who* is to determine how medicine is to be practised both in hospitals and elsewhere?

The moment that full reliance for individual and family responsibility is placed on government an essential element in "mental and social well-being" is undermined.

Overnutrition Danger

World doctors in conference at Folkestone in U. K. were told recently that overnutrition was as great a danger in pregnancy as its opposite and that in many diseases the undernourished patient had the better chance of recovery.

Sir Weldon Dalrymple-Champneys, a former Chief Medical Officer of the British Health Ministry, said that good nourishment was not always the protection against infection that it was believed to be, nor was it often an advantage. He told the World Health Section of the annual congress of the Royal Society of Health that in a number of diseases an individual was more likely to overcome infection if he were undernourished than if he were wellnourished.

During the food shortage of World War II sweeping epidemics were forecast but they did not occur. Many people believed one reason was that people did not eat so much as in peacetime.

Dr. Cicely D. Williams thought the question of overnutrition was a problem going to occupy doctors a great deal in future. Research on which she was at present engaged indicated that overnutrition was as great a danger in pregnancy as undernutrition.

They were hearing a lot from America of diseases thought to be largely due to overnutrition and unbalanced nutrition. No sooner did a man get over the deficiency diseases than he became "a risk from obesity and overnutrition."

The congress was attended by 25,000 delegates from 50 overseas countries including India.

Apartheid Applied to Nursing Profession

A Nursing Bill, recently published in Cape Town, applies apartheid to the nursing profession in South Africa by making the Nursing Council—the Governing Body—an all-White body and providing for segregation within the Nursing Association.

This is the Nationalist Government's fourth attempt this year to drive apartheid into the social sphere.

X-ray Radiation More Dangerous than Radioactive Fall-out

According to Dr. Djoern Trumpy, Norweigian physicist, hospital x-rays and the rays from luminous clock dials are a much greater danger factor than the fall-out from atom-bomb tests.

Dr. Trumpy, an expert on radiation, said at a meeting at Oslo that radiation from medical x-rays was 70 times stronger than that from radioactive fall-out.

He said, any new source of radiation was an evil and "we must work for the ending of atom-bomb tests and a ban on the use of nuclear weapons."

Rockefeller Grant to School of Tropical Medicine

The Rockefeller Foundation has announced a grant to the Calcutta School of Tropical Medicine of 25,000 dollars for the purchase of specialised research equipment.

Indian Delegation to the World Health Assembly

The Government of India's delegation to the World Health Assembly which met in Geneva in May 1957 was formed with the following: Leader Dr. A. Lakshmana Swami Mudaliar, Vice-Chancellor, Madras University, Delegates Lt.-Col. C. K. Lakshmanan, Director General of Health Services and Dr. A. C. Ukil, Calcutta. Alternates, Sri K. V. Padmanabhan, Consul General Geneva and Dr. B. N. Sharma, Director of Health Services, Rajasthan.

World Red Cross Day

The district and State branches of the Indian Red Cross Society numbering more than 400 celebrated World Red Cross Day on 9-5-57.

The Day which marks the 129th birth anniversary of the founder of the Red Cross, Henri Dunant, reminds men and women all over the world the spirit of compassion and universal brotherhood for which the Red Cross stands.

The theme of this year is "Red Cross in times of emergency".

State Public Health Laboratory Services

The Government of India has approved the establishment of regional laboratories in Madras, Kerala and Bihar under the scheme for the development of public health laboratory services formulated by the State Governments.

The Centre has approved the establishment of two regional laboratories in Madras State, one in Tirunelveli District and another in North Arcot District; one regional laboratory in Kerala at Ernakulam; and one in Bihar at Patna, which will serve as a pattern for 16 regional laboratories to be established in other districts.

The State Governments have been requested to implement their respective schemes as expeditiously as possible.

Under the scheme, scholarships and fellowships will be awarded to trainees on a recurring basis subject to a maximum of Rs. 500 per annum. The expenditure on scholarships will be shared by the Government of India and the State Governments on a 50-50 basis.

For financing the State schemes, the Central Ministry of Health has made initial contribution of Rs. 12,500 for the Madras scheme, Rs. 8,000 for the Kerala scheme and Rs. 45,000 for Bihar in respect of the principal laboratory and 4 regional laboratories to be established during 1957-58.

Further grants-in-aid will be given to the State Governments on the receipt of progress reports indicating complete details of the actual expenditure incurred during the first six months of 1957-58 and the estimates of expenditure likely to be incurred during the remaining six months of the year.

Diploma in Clinical Pathology

The one year's course of instruction for the Diploma in Clinical Pathology under the Faculty of Tropical Medicine and Hygiene, West Bengal will begin at the

School of Tropical Medicine, Calcutta on the 1st July, 1957. This course is open to medical graduates or candidates possessing equivalent qualifications with at least one year's experience as House Medical Officer or Pathologist in a recognised institution.

Campaign Against Epidemics

Three processions started from Wellington Square, Calcutta, on 5-5-57 in the afternoon to mark the beginning of the anti-epidemic campaign week sponsored by the Indian Medical Association. The processions, in which members of a number of social service organisations took part, included about 100 cars carrying musical parties, charts and models.

The processions visited localities in South, North and East Calcutta. At bustee corners talks were given by doctors and volunteers to explain the necessity of inoculation and vaccination. In the evening the processions converged at the Ochterlony Monument where a meeting was held.

The first procession was led by the Mayor, Dr. Triguna Sen, the second by Mr. Keshab Chandra Basu, Deputy Mayor, and the third by Dr. B. P. Tribedi, President of the I.M.A., Calcutta branch.

Before the processions started the Mayor expressed the hope that with the co-operation of all sections of people, it would be possible to eradicate smallpox and cholera epidemics from Calcutta in two years. While he appreciated the efforts now being made by the I.M.A. and other organisations to fight the epidemics, Dr. Sen wondered why steps had not been taken earlier. Many lives could have been saved if that had been done.

Measures to fight effectively the cholera and smallpox epidemics were discussed at a recent conference called by the I.M.A. The conference set up an operational council with representatives of the State Government, the Corporation, the West Bengal Pradesh Congress Committee, the Communist Party, I.N.A.C., Y.M.C.A., Y.W.C.A. and R.W.A.C. to draw up a comprehensive programme of inoculation and vaccination.

Grants for Family Planning

A family planning training centre has been established in Bombay for imparting training in family planning to doctors, health visitors and medico-social workers. Five grants for opening and maintenance of family planning clinics and two grants for research schemes on family planning were made by the Government of India in March and April.

A grant of Rs. 14,040 has been made to the Government of Madras for opening and maintenance of family planning clinics. For the same purpose grants of Rs. 10,100, Rs. 5,190 and Rs. 5,500 have been sanctioned to the Bombay Municipality, the Family Planning Association of India, Bengal branch, Calcutta, and the Philadelphia Hospital, Ambala, respectively.

Under research schemes the Madras Government received a grant of Rs. 8,276 for the study of fertility and sterility problems, while the Lady Hardinge Medical College and Hospital, New Delhi, received a grant of Rs. 6,000 for collection of data relating to cases of sterility.

A total provision of Rs. 497 lakhs has been made in the second Five-Year Plan for family planning schemes, of which Rs. 400 lakhs were provided in the Central plan and the rest in the State plans. A detailed scheme for promoting family planning had been drawn up for the whole country, which consists of the opening of Government-aided family planning clinics, specially in rural areas, carrying on of publicity for family planning through audio-visual aids, training of medical and auxiliary personnel in family planning, laying down the standards for contraceptives and undertaking of demographical, medical and biological research studies.

Campaign Against Malaria in Delhi

As part of the antimalaria campaign in Delhi infant blood smears taken from various urban localities are now being examined.

A collection of 1,777 blood samples made earlier were examined during March and were found malaria positive. The smears now being examined number 1,473.

Additional staff, it is stated, were employed in the city during March for intensifying the antimalaria measures. Desilting and removal of rank vegetation were carried on in various localities.

Field demonstrations of antimalaria measures were organised for medical and non-medical personnel attending the training courses in malariology at the Malaria Institute.

REVIEWS

Die Lungentuberkulose. Diagnose and Therapie—Von Prof. Dr. P.-G. Schmidt, Waldbreitbach. 3., völlig neu bearbeitete Auflage, 1956. XII, 384 Seiten, 234 teils mehrfarbige Abbildungen, Gr.-8°, Ganzleinen DM 58.

Pulmonary Tuberculosis—Diagnosis and Therapy (in German)—By Prof. Dr. P.-G. Schmidt, Waldbreitbach. 3rd entirely revised edition. XII, 384 pp., 234 partly coloured illustr. Georg Thieme, Stuttgart, 1956. DM 58.

A new book on tuberculosis in the language in which the Gohn and Assmann foci were first described is read with interest and high expectations. The author deals competently and comprehensively with every aspect of this vast subject.

History of tuberculosis, the tubercle bacillus, pathways of infection, pathological anatomy, allergy and immunity, course and classification, heredity and constitution, personal history, signs, methods of investigation, the clinical picture, pleurisy, extrapulmonary tuberculosis (only 12 pages), therapy, prognosis and success of surgical treatment, public health measures are the head lines of the 16 chapters into which the book is divided. Four closely printed pages of references cover predominantly German literature upto 1956. The index seems adequate but contains some misprints such as *Kerning* instead of *Kernig* and others.

The natural history of the tubercle bacillus is upto-date, the various possible routes of propagation are well described, the discussion of the complicated serological problems adequate, the view on BCG well balanced. Laboratory and test methods are so described that even the inexperienced can carry them out when following the prescriptions. The 90 pages devoted to the clinical picture and course show the great experience of the author and are lavishly illustrated with numerous x-ray photos, many of which show as inset the tomographic picture of the pathological findings.

The chapter on therapy covers in 128 pages chemotherapy, antibiotics and surgical treatment to perfection. Several tables show the results achieved by different authors with various methods of treatment; indications and contra-indications of surgical procedures are fully discussed. The analysis of prognosis and results of surgical treatment is based on rich statistical material.

This is a very useful and not too voluminous treatise for all those who look for practical guidance in dealing with tuberculous patients in private or hospital practice. The standard of printing and photography deserves all praise but a peculiarity should be mentioned in the hope that it will not become a new fashion. The names of authors quoted in the text are not followed by the date of their publications, so that every time one has to look up the references at the end of the book to find out whether a particular statement, report etc. are recent or many years old, which does not make for easier reading.

Therapeutische Technik für die ärztliche Praxis –Herausgegeben von Prof. Dr. K. Hansen, Lübeck, and Dr. Dr. K. Bloch, Stuttgart. 4., völlig neubearbeitete Auflage, 1956. XXIV, 880 Seiten, 518 Abbildungen in 571 Einzeldarstellungen, Lex.-8°, Ganzleinen DM 95.

Therapeutic Technique for Medical Practice (in German)—Edited by Prof. Dr K. Hansen, Luebeck, and Dr. Dr. K. Bloch, Stuttgart. 4th entirely revised ed. XXIV, 880 pp., 518 illustr. in 571 figures. Georg Thieme, Stuttgart, 1956. DM 95.

A volume such as this, containing over 900 pages and weighing 5½ lb., a reviewer approaches with trepidation. On looking through it, however, one is soon captivated by the vast amount of information provided, the great variety of subjects covered, the editorial skill that avoided overlapping and repetitions, although the 21 chapters have been written by 23 different authors. The presentation is concentrated, intensely practical and enlivened by a wealth of well selected illustrations, photos and drawings. Everything is done to make orientation easy, to facilitate the finding of a particular procedure without loss of time; the table of contents is so detailed as to fill sixteen and the index 24 pages.

To each of the following subjects one separate chapter has been allotted: internal medicine, dietary treatment, neurology, physical methods in psychiatry, surgery, urology, gynaecology, obstetrics, paediatrics, orthopaedics, massage and medical gymnastics, chiropractice, ophthalmology, oto-rhino-laryngology, dentistry, skin and venereal diseases, hydro- and balneotherapy, light-, shortwave- and ultrasonic treatment, electro- and x-ray therapy.

A large variety of therapeutic methods has been described reaching from the proper way to give every kind of injections, conduct any kind of deliveries, manage numerous pathological conditions in children, work out diets for all sorts of ailments to modelling of foot supports, carrying out vibration massage or the best way to apply mud and paraffin packs. Hundreds of excellent photos show the most diverse procedures such as how to use leeches or instill eye drops, how to manipulate a cervical spine or administer an intrasternal blood transfusion.

Everywhere the authors try to restrict the included material to the requirements of a general practitioner of high efficiency and a very wide field of activities with special emphasis on such aspects that are not sufficiently taught in the college. Differences of opinion are, of course, possible as to where to draw the line. This reviewer thinks that, for instance, the chapter on special surgery contains descriptions of far too complicated operations such as resection for intestinal obstruction, or the chapter on x-ray therapy material on dosage and positioning of interest only to the specialist; on the other hand, the complete omission of cystoscopy, procto-, recto- and sigmoidoscopy in such an encyclopaedic volume is difficult to understand.

Inspite of such criticisms, this book should prove very valuable in places where one man has to do the work of several specialists, as in district hospitals, or in a well equipped private surgery in smaller towns.

Paper, binding and print are of very high quality; the lavishly provided illustrations considerably enhance the value of the text.

Lehrbuch der Tropenkrankheiten—Herausgegeben von Prof. Dr. E. G. Nauck, Hamburg. Unter Mitarbeit von G. Fuhrmann, H. Knüttgen, H. Lippelt, W. Minning, W. Mohr, H. Mühlpfordt, E. Reichenow, H. Vogel, A. Westphal, F. Weyer. 1956. VIII, 432 Seiten, 125 zum Teil mehrfarbige Abbildungen, Gr.-8°, Ganzleinen DM 64.

Textbook of Tropical Diseases (in German)—Edited by Prof. Dr. E. G. Nauck in collaboration with ten others. VIII, 432 pp., 125 partly coloured illustr. Georg Thieme, Stuttgart, 1956, DM 64.

This is the first text book on this subject in German language since 1942, published like its predecessor by staff members of the Hamburg Institute of Ships—and Tropical Diseases, of which the editor is the director. All the important infectious diseases and nutritional deficiencies seen in tropical and subtropical countries are conventionally but adequately described. Therapeutic informations are upto date: the recommended preparations show an understandable bias towards German products, although others are duly mentioned.

Accordingly, the treatment of choice in intestinal amoebiasis is yatren, orally and in retention enemas, or resotren; emetine should be given only intravenously. For the eradication of tertian or quartan malaria is recommended resochin follwed by primaquine. In leprosy

the sulfones, especially DDS are recommended; thiosemicarbarsone, IHN, PAS, cortisone and ACTH are critically discussed. In the treatment of plague sulpha drugs are found sufficient in milder cases whereas terramycin appears to be the best for heavier infections. The chapters on malaria, leprosy and rickettsiosis particularly appealed to this reviewer.

The quotation of authors is minimised to such an extent that, for instance, the whole story of the exoerythrocytic cycle of malaria parasites is told without mentioning a single name. References to literature or bibliography are absent. Many of the illustrations have been taken over from earlier publications but there are some striking electron-microphotos of viruses.

This book is meant, as the editor points out, for those studying in the Hamburg Institute and for practitioners working in tropical countries or preparing for such activity. For such purposes it is a reliable guide.

Intravenose Cholangiographie—Grundlagen, Technik, Ergebnisse—Von Priv. Doz. Dr. Th. Hornykiewytsch, Giessen. Mit einem Geleitwort von Prof. Dr. R. Janker, Bonn, und einem Vorwort von Prof. Dr. Dr. H. Bohn, Giessen. 1956, XII, 159 Seiten, 110 Abbildungen in 185 Einzeldarstellungen, Lex-8°, Ganzleinen. Georg Thieme Verlag, Stuttgart, Germany. DM 54.

Intravenous Cholangiography—Basic Concept, Technique, Results (in German)—By Prof. Th. Hornykiewytsch, Giessen. With introductions by Prof. R. Janker, Bonn and Prof. H. Bohn, Giessen. 1956, XII, 159 pages, 110 illustrations Lex 8°. Georg Thieme Publishers, Stuttgart, Germany. Price 54 Marks.

This monograph is of great interest to the specialist. It introduces the subject by a discussion of the anatomy and histology of the extrahepatic bileducts, and the effect increasing age has on their structure. The method of cholangiography is introduced by a description of the different contrast media, their pharmacology and toxicology. Excellent pictures demonstrate the normal and diseased bileducts. A special chapter is devoted to possible sources of error in interpretation. Of particular interest is the discussion of functional disturbances of the extrahepatic bileducts and their visualisation by x-rays. An excellent bibliography includes papers published upto the middle of 1955. This book is highly recommended to the radiologist and gastroenterologist.

A Manual of Human Anatomy—By J. T. Aitken, M.D., G. Causey, M.B., F.R.C.S., J. Joseph, M.D., M.R.C.O.G., and J. Z. Young, M.A., F.R.S. E. & S. Livingstone Ltd., Edinburgh and London, 1956. Vol. I—Thorax and Upper Limb; Vol. II—Head and Neck; Vol. III—Lower Limb. 8½" × 5½". Price 14s., 16s. and 12s. 6d. net respectively.

At the very first look these small volumes would appeal to the students, because of their reduced size and handiness, in contrast with the usual books on this subject. In these Manuals the student of human anatomy would be guided through a method of dissecting the human body by linking together the structure and function of different parts of the body as well as the anatomy, necessary for future study of clinical medicine. It is hoped that the study of the anatomy of each part would thus continue with some knowledge of the functional implications, and not as a mere exercise of memory. The descriptions, diagrams and instructions would prove very helpful to the young student of anatomy who would then be able to approach the routine dissection of the human body with much more lively interest than perhaps obtains at present. Paper, type, printing, and specially the binding are good.

Year Book of Obstetrics & Gynaecology (1956-57 series)—Edited by J. P. Greenhill, B.S., M.D., F.A.C.S., F.I.C.S. The Year Book Publishers, Inc., Chicago, U.S.A. 592 pages; Price $6.75.

This well-known annual volume contains the abstracts of, along with extensive editorial comments on, articles taken from journals received between July 1955 and July 1956. This volume follows the general pattern of previous years of two broad groups—Obstetrics and Gynaecology, each being subdivided into convenient sections. The articles abstracted have been taken from a very large number of journals, thus giving the reader the benefit of gleanings from a world-wide coverage. The abstracts are well-chosen and the editorial observations particularly useful, specially to the young specialists.

Punjab Medical Journal—Editor Dr. R. R. Laroia. Published from Sodal Road, Jullunder City, Punjab, India. Special numbers on Cardiovascular and Respiratory Diseases. Part I (November 1956) and Part II (February 1957).

These two special issues contain several papers from many members of the teaching staff of Amritsar Medical College, as well as from other practitioners, mainly from the Punjab. Most of these articles are likely to be of help to the practitioners who would be enabled to brush up their knowledge from these papers giving modern ideas and practices in cardio-respiratory disorders. The reading of the proofs has been perfunctory.

Practical Pediatric Dermatology—By Morris Leider, M.D. The C. V. Mosby Co., St. Louis, U.S.A., 1956. Board bound in cloth, 10" × 6¼"; 433 pages with 280 photographs and 13 drawings. Price $10.50.

In the Foreword of this book, Dr. Marion B. Sulzberger, a teacher, colleague and friend of the author has put forth a forceful plea about the very great need for theoretical and practical information on skin diseases of infants and children, for, it has indeed been aptly said that "the infant is not just a little man, he is quite another kind of little man." The subject has been very ably handled by the author who appears to have achieved his objective to assemble and impart theoretical and specially practical information on the subject in a very useful way to students, general practitioners and even specialists in dermatology. The great wealth of accurate and modern data about pediatric dermatology presented in this book will indeed be very useful to every student of medicine.

Year Book of General Surgery (1956-57 series)—Edited by Evarts A. Graham, A.B., M.D.; with a section on Anaesthesia, edited by Stuart C. Cullen, M.D. The Year Book Publishers, Inc., Chicago, U.S.A. 647 pages, 157 illustrations; price $6.75.

A good deal of material has been reviewed with frequent editorial comments. The subjects have been discussed in 31 chapters for general surgery and ten chapters in the section on anaesthesia.

Anatomical Techniques—By D. A. Tompsett, B.SC., PH.D., with a foreword by Sir Cecil Wakely, BT., K.B.E., C.B., LL.D., F.R.C.S. Published 1956, by E. & S. Livingstone Ltd., Edinburgh and London. Board bound, 10″ × 7″, 240 pages. Price 35s. net.

The author is a professional prosector to the Royal College of Surgeons of England. He has thus been able to devote all his energy to the perfection of the art of dissection for over ten years. This contrasts with the usual practice of only sparetime being utilised for dissection purposes by teachers and demonstrators. Dissection is the only "business" of this author. It is well known that teaching human anatomy becomes far more realistic, and fascinating to the students, if it is done with the help of dissections made from the human body than by teaching with the help of drawings and illustrations. This book is sure to be of great help in this respect, for it is both instructive and practical. The techniques described are limited to those concerned with the preparation of museum specimens of human anatomy. This is indeed a really useful book for students, anatomists and surgeons alike.

Religious Factors in Mental Illness—By Wayne E. Oates. Published by George Allen and Unwin Ltd., 1957. Pp. 239 plus xv. Price 16s. net.

The reviewer fully agrees with the author when he says "Religion is just like dynamite ; equally as dangerous as it is useful." Many a patient had been found to frequent local temples before the acute outburst of mental illness. Here religion acted as a trigger for setting off the illness. Mental health is often hindered in an atmosphere saturated with religion. On the other hand, religion in some cases can offset the malignant influence of defective home relationships by allaying anxiety and releasing tension. Patients who have an idea of unpardonable sin often get relief from a combination of shock therapy, re-educational psychotherapy and religious counselling. The author has aptly remarked that these persons seem to be 'spiritual hypoglycaemia' patients. In schizophrenic thoughts the concept of the self is magnified to offset the threats to the patients' self-esteem. The schizophrenic person according to Adler hotly passes fictitious goals. There is sometimes a confusion of the self with God and of symbolism with reality. Some mental patients strive hard to get rid of anxiety through religious experiences. They over-concretise religious perceptions. In other instances they excessively indulge in abstractions and stereotypy. Religious delusions some times express unalloyed hostility. Many mental patients refuse to go for psychiatric help. Many people complain of senselessness and aimlessness of their lives, their anxiety centres around the loss of spiritual concern. All psychiatrists must have come across patients who believe in magical and mystical solution of tensions. Others prefer illness to the adventures of health. A minister can be of great service to the doctor to establish the confidence of the patient and the family without which necessary treatment cannot be carried out. Further, the minister's service is most valuable during the period of convalescence when he can help patients get work and place them within a meaningful circle of friends. In this country, the psychiatrist is handicapped to a great extent because of the absence of the helping hand of a minister or of other social agency. The author has done great service to mental patients and to ministers as well as to psychiatrists by pointing out the ways in which disruptive forces can be cemented together for the rehabilitation of the mental patients to society.

An Outline of Bacteriology and Immunity—By Ronald Hare. Longmans, Green & Co., London. Demy 8vo., pages 418. Price 35 shillings.

Written with a view to initiating budding clinicians into bacteriological thoughts, the book naturally contains more emphasis on application of bacteriology, and bacteriological technique. As it is based primarily on lectures given to students at a London medical school, such subjects as bacteriology of cholera, bacillary dysentery, plague, etc., which are of special interest to students in tropical countries, have received rather scant attention. Sufficient weight has, however, been accorded to bacetrial, viral, and fungal infections, which are of particular interest to human medicine. The book is well illustrated and nicely printed.

Text Book of Physiology and Biochemistry—By G. H. Bell, B.SC., M.D., F.R.F.P.S.G., F.R.S.E.,; J. N. Davidson, M.D., D.SC., F.R.F.P.S.G., F.R.I.C., F.R.S.E. and H. Scarborough, M.B., PH.D., F.R.C.P.E., M.R.C.P.; with a foreword by Robert C. Garry, M.B., D.SC., F.R.F.P.S.G., F.R.S.E. Third edition, 1956. Publishers E. & S. Livingstone Ltd., Edinburgh and London. Board bound, 9¼″ × 7″, 1068 pages; price 60s. net.

The present-day tendency to specialisation, along with the diversity and multiplicity of these specialities naturally makes it more and more difficult for one single author to write a text-book on the basic subjects of medical studies. It is good to find that by a happy combination, a physiologist, a biochemist and a clinician have been together responsible for this book which is now in its third edition in six years of publication. Divided into 55 chapters the whole subject has been well presented in a manner which will help the beginner not only to grasp the subject but even to find an active interest in this basic subject on which the student will have later on to build his knowledge of clinical medicine. Can be well recommended to all students of physiology and biochemistry, as well as to the teachers for ready reference in preparing lectures.

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SUPPLEMENT
Journal of the Indian Medical Association

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VIII ASSAM MEDICAL CONFERENCE, DHUBRI 1957

The 8th Assam Medical Conference was held at Dhubri on 18th, 19th and 20th January 1957 under the auspices of the Assam State Branch of I.M.A. Dr. B. K. Ganguly, the Chairman of the Reception Committee accorded a hearty welcome to the delegates, visitors, and guests. In his address of welcome, he gave a short report about the Dhubri Town. He emphasised that "the association should be less philosophical and more practical to bring to actuality the ideal of service in the field of medical help to the people. The number of qualified doctors are not so few as expressed by the Government now and then. Actually it is due partly to concentration of doctors in the town and cities and inattractive emoluments in Government service that causes the apparent shortage."

The Conference was inaugurated by the Health Minister Sri R. N. Brahma. In his inaugural speech, he highly appreciated the service rendered by the members of the Medical Association and the Assam Medical Relief Committee in the anti-plague campaign at Gauhati and expressed heart-felt thanks to the Association for the same. He further appealed to the doctors to develop more missionary spirit within them so that the people at large and the State in particular may be benefited in the years to come.

The Exhibition was opened by the Health Minister Sri R. N. Brahma. The Scientific Section was inaugurated by the Director of Health Services Dr. N. C. Bardoloi. The Scientific Section though short was interesting and quite a number of papers were read and discussed.

Dr. S. P. Nath, the president of the conference in his address, said :

"The Medical and Public Health Schemes of the State under the first Five-Year Plan period prepared at the district levels were hurriedly sanctioned in toto perhaps without examining the details. Defective as they were, varying from one project to the other, their implementation has been an expensive failure and a mere semblence of real medical aid. Admittedly, however, the rural population advanced a step forward in drugging and misusing the chemotherapeutice and patent tablets, prescribed and distributed, in some areas at least, by unqualified amateurs. This has led to a large scale habit of self-medication and consequent drug resistance. Sulpha drugs are now available in grocers' shops, in the open market. Drug Rules are there in paper. A single Drug Inspector for the whole State can do little to stop this vicious trade. At least one Inspector for each district could touch only the fringe of the huge problem.

Here and there, some progress has been made and it cannot be denied that some of the existing hospitals have been expanded though it has not been thought justifiable to staff them properly; X-ray apparatus have been installed in all district and sub-divisional hospitals without the service of Radiologists; equipments have been purchased for laboratories but no pathologist could be provided; sanction has long been accorded to appoint surgeons in district hospitals but the poor salary offered for these or other specialists' posts attracted few applicants. To my mind it appears that the qualified medical men and women of our country after being trained in the short course specialities could be better utilised for these vacant positions during the time by which full-fledged specialists or high academic attainments as visualised by the authorities could be made available.

The Association also seriously considered the Second Five-Year Plan specially in connection with the health scheme. We have already forwarded recommendation for incorporation in the plan but I feel that the important items which should be taken up very carefully are :—

(1) Prevention of illness;
(2) Rendering scientific medical relief to all irrespective of individual financial resources;
(3) Undertaking measures for achieving positive health;
(4) Spread of Health Education; and
(5) Medical Research.

I do hope that the Government will seriously consider our viewpoint, and will take steps to materialise the comprehensive scheme of the Indian Medical Association which includes all aspects of medical and health measures consistent with the financial condition of the State and in doing so, the practical experience gained from the success and failure, during the past period, may be gainfully utilised.

DR. B. K. GANGULY, THE CHAIRMAN OF THE RECEPTION COMMITTEE.

Rural Health Service

According to the constitution of India, "every individual has the fundamental right of having full provision from the Government for attaining the highest standard of health and wellbeing." W.H.O. defines health as being a state of complete physical, mental and social well-being and not merely the absence of disease and infirmity. It comes, therefore, that in our fight against death and disease as well as for health, we cannot confine our ideas with the cure and prevention of disease but must have a wider outlook. It is to be realised that sickness is a social problem and involves the community as a whole with its environment forming the soil for its growth.

Again, the socio-economic condition of the people are inseparably connected or rather inter-related with the Public Health and cannot be treated in isolation.

Nearly 80 per cent of the population of India live in villages and naturally the question of extremely poor or non-existent rural health condition should receive topmost priority. Urban people live and thrive at the cost of the villagers. They are the illiterate tax-payers, the cultivators, the growers and the labourers. Century-old habits, prejudice, superstition, illiteracy and socio-economic conditions are there. The fundamental necessity, therefore, is to create in them a real sense of health consciousness. In our struggle for rapid progress in various directions there can be no greater asset for the nation than positive health.

No doubt we require more hospital beds, better equipments, proper personnel and establishment of rural health centres but public need is something more. Mere distribution of leaflets, holding of health exhibitions, magic lantern and film shows, display of posters will not be sufficient for the purpose. The new approach should be more or less on a personal basis, to work with the people, to create interest in their own welfare and health affairs and to persuade them to work to solve their own problems themselves with the help of health educators. There should be a determined effort on a planned basis to provide safe or even protected water supply and sanitary method of disposal of human excreta. This requires proper and prior survey by a district sanitary engineer and trained technicians for implementation. Lack of these was the cause of failure in the past.

This is a formidable task. I do not consider it humanly possible for a Civil Surgeon burdened with his hospital and official duties; a D.M.O.H. saturated with his numerous programmes or a few Medical Officers to contact people or even to supervise completely the works in hundreds of villages scattered over a wide area. Government and its Health Directorate has, therefore, a heavy and exacting responsibility on them. The responsibility does not rest with the doctor alone for solving the health problems. All available resources should be pooled together to work with avowed sincerity and tenacity for the "attainment by all peoples of the highest possible level of health". Hundreds of health educators should be specially trained with the pioneering zeal to work in villages to educate the people in the principle of healthful living and disease prevention.

Government must appreciate the need for re-orientation of the method and concept of health education and public need be more alert in this respect. This is a field and team work, where head and heart must work together. This will go a long way to win the strategic war against disease and ill-health and in establishing a healthy and happy community.

School Health Service

School Health Service must find a prominent place in the National Health Planning. For its proper implementation, a separate branch should be created under the Health Directorate and should be staffed with sufficient number of trained personnel. School children, readily available in groups, will form the circle for preliminary health education and to disseminate the principle to their homes and neighbours. Armed with the ideals of healthful living, they will grow up as members of a healthy community to build up a healthy nation. The State Branch of the I.M.A. formulated and submitted such a scheme to the State Government but I am afraid this has not received proper attention. With the new concept of positive health, we must start from the beginning, from infancy and childhood, to form health habits.

Advisory Boards

Such a stupendous task, as stated above, is not possible to be tackled by the few Government Medical Officers over-burdened with miscellaneous daily programmes, which form but a minor percentage of the medical practitioners. It will require active co-operation of the people and the medical profession. Government is advised to be wise in taking the organised medical profession in confidence which is always ready to co-operate in the nation building work. Representatives of the medical associations at the State and District and even Sub-Divisional levels should be invited and included in all such Advisory Boards if these Boards are meant to be active and useful. Schemes affecting the Medical and Public Health in general or intended to be included in any project or development scheme, need be discussed in such Advisory Boards before being finalised instead of being batched in official levels. Experiences and ideas of the members of the profession who deal with health problems and feel and think in these lines should be usefully utilised. If such co-operation and support are expected from them, it is but necessary that they should be consulted at every stage.

Medical Personnel

We have heard the leaders of the State to lament over the oft-repeated myth of lack of medical personnel and paucity of funds. Our past presidents challenged these views with pointers. Not to speak of the increasing number of unemployment amongst medical men of the country, even 50 per cent of the products of the Assam Medical College could not be provided with service. The cause lies somewhere else. It is a failure of policy to utilise the available personnel.

Medical study requires larger expenditure, longer period of time, and greater intellectual efforts—'certainly not less than it takes to enter the coveted administrative or foreign service'. But while fixing the salary of doctors, the Pay Committee and the authorities-in-power, sing the doctrine of humanitarian work and missionary spirit, as if a doctor himself is not a human being, as every other individual, requiring the reasonable comfort and amenities, education of children and maintenance of 'inevitable dependents'.

The terms of service must be made attractive, special allowances should be sanctioned for those who serve in rural areas and amenities must be provided. The low returns to the high investments in the making of a doctor has got a serious repercussion on our best boys and girls who are now distracted from taking medicine as their career and will inevitably deteriorate the standard of the future products.

Funds and personnel did not stand in the way of establishing health centres in our neighbouring State and it is to the credit of the W. B. Government who took a bold lead and sanctioned rural allowance equal to their basic pay. They have shown the way and other States will gain by following their example. It requires a determined will and policy. There is no alternative short-cut.

The Central Health Council in February 1956 recommended that "The Centre should give an adequate subsidy in order to enable the State Governments to improve their terms of service." I hope that our State Government will take the fullest advantage of this offer.

Unification of Service Cadres

The Medical Licentiates form the bulk of the general practitioners catering for decades to the need of the dumb rural population. In service, they have been kept in a water-tight compartment. In the present set-up of National Health Service and with the closing down of the School Medical education for over ten years, it is no longer justifiable to continue the invidious classification of services into so many cadres and again cadre within cadre. This casteism has already eaten into our national interest creating complexes and compartmentalism, unhealthy relations and competition. All these were creations of the foreign rule. It has led to a state of frustration in the minds of the major number of people in service who have lost incentive to work. Integrations of all the cadres into a unitary service should not end in discussion but must be translated into action without delay. I hope our State Government will take a bold lead in this direction. I find no reason why this cannot be done in our State while the Madras Government introduced it ten years back with success. Financial stringency is an ever-ready excuse and can be overcome by determined will. Our Association had this in mind when it recommended a scheme of integrated service to the State Government. It is high time that definite action be taken on the scheme.

Amalgamation of Services

With the ideal of positive health in a welfare State, the existence of a separate Medical and Public Health Services are not only archaic but is redundant and back dated and for the purpose of efficiency, no time should be lost to unite them in the periphery as has been done at the top.

Tea Garden Medical Service

The I.M.A. took up the cause of the A.M.O.'s serving in the Tea Gardens and a special sub-committee was appointed to draw up a scheme to safeguard their interest in all aspects.

The main problems of the A.M.O.'s, we visualise are (1) Security of service and (2) Status. There should be specific rules to guarantee the service so that no A.M.O. is victimised on flimsy grounds with a notice of termination. The question of status was discussed on previous occasions too. The Association always thinks in terms of proper health service for all attached in tea estates. There should be a uniform policy of medical aid to all concerned. The representation on behalf of the Association to the I.T.A. in connection with the service conditions, study leave, enhanced pay scale, status etc. is expected to be favourably considered by the authorities concerned.

Medical Education and Post-graduate Study

The first World Medical Education Conference held in London under the auspices of the World Medical Association gave serious thoughts on the problem of under-graduate medical education. Some leading educationists thought that for the general practitioners, the syllabus of study was heavy and details were not useful to them as to the specialists. I feel that this matter should be considered by our University. If a device can be worked out to keep the general practitioners abreast of the time with regard to the latest advancement of medical science by institution of periodical short time intensive post-graduate study facilities with practical work in hospitals and laboratories, the country may have always a band of well trained medical personnel at its call.

With the upgrading of the school medical education course by our National Government, the authorities are apt to forget, as is often seen from their statements, that the major portion of the general practitioners are even now the medical licentiates, and they need for the advancement of their professional knowledge and status and for better service to the people, post-graduate study facilities. It seems that there is a misconception about the word "Post-Graduate" meaning thereby that only the graduates of medicine can have this training. I feel that a qualified medical man, having completed a course of study prescribed by a constituted body, should have the same privileges. So, University Post-graduate diploma courses should be thrown open to them for the benefit of the profession as well as the people at large. The Bhore Committee also recommended in the same line. Unfortunately even the D.T.M. course in the School of Tropical Medicine, Calcutta, that was kept open to the licentiates has been closed against them. The same arguments, as I have already mentioned and the results so far shown by the medical licentiates in the examination in the D.T.M. course, justify their claim to have the gates re-opened to them. I hope that the University of Calcutta and the Government of West Bengal will join hands to give shape to our recommendations on this subject.

Indian Medical Council Bill, 1956

The Indian Medical Council Act, 1933, was passed in the teeth of opposition from the entire medical profession of India. This Act failed in its main objectives of preparing a National Medical Register and in establishing direct reciprocity with other independent countries. Moreover by excluding the medical licentiates, who form the bulk of the medical profession in India, from the purview of the Act, it had created an unhealthy division in the ranks of profession. The organised Medical Association of the country ceaselessly demanded its amendment. At last, the Indian Medical Council Bill, 1956, repealing the Indian Medical Council

Dr. S. P. Nath, the President of the Conference.

Act, 1933, was introduced in the Rajya Sabha by the Ministry of Health, Government of India, in June 1956 and was hurriedly passed. The Bill fell far short of our expectation and the Indian Medical Association lodged its strong protest. The Bill has since received the approval of the Lok Sabha. While the Union Health Minister said that the Indian Medical Council was consulted in this matter, the President and some members of the Council denied the fact. Who is answerable for this anomaly? Though it had taken 23 years to foist this Bill, it is no less reactionary than the original sponsored by an alien Government to suit its own demands. This Bill aims at division of the profession in our country when our Association's objectives have been consolidation. The Indian Medical Association recommended one common schedule for all recognised medical qualifications of the country and one All-India Register in an alphabetical order. Medical Licentiates and Medical Graduates are statutorily recognised registered medical practitioners in their respective State Medical Councils and cannot be separated in the purview of the Bill under separate schedules, which go against the fundamental rights of the constitution laid by the Indian Republic. This Bill prevents professional solidarity so essential for the healthy growth of the comprehensive medical service of the future and finds no parallel anywhere in the world. In independent India we must assert our rights and privileges. It is unfortunate that our National Government has not seen eye to eye with the aims and objects of the IMA, the voice of our profession in our country. In the national interests and in the interests of the profession, this arbitrary and detrimental move, on the part of the Union Ministry of Health should be fought tooth and nail. The profession stands solidly for the removal of this invidious distinction. Hence, the sooner the Bill is scrapped from the Statute, the better for our profession and our country.

Indigenous Medicine

I am in favour of intensifying research in indigenous medicine. This can best be done by adding a research wing to the Medical Colleges where controlled and comparative therapeutic trials can be carried in the progressive scientific lines. Its place in the National Health Service is a controversial question. Vested interest and political pressure should not prevail upon its rational and scientific approach.

The Health Survey and Development Commitee said, "We do not propose to venture into any discussion in regard to the place of these systems in organised state medical relief in this country. We do, however, say quite definitely that there are certain aspects of health protection which can be secured wholly or at any rate largely, only through the scientific system of medicine. Thus Public Health or Preventive Medicine, which must play an essential part in the future of medical organisation is not within the purview of the indigenous systems of medical treatment as they obtain at present."

"India, 1954"—a Government of India publication writes, "Since the existence of several systems of medicine in the country was a source of confusion, the Government felt that only one system should be recognised, although contribution from other systems could be profitably incorporated".

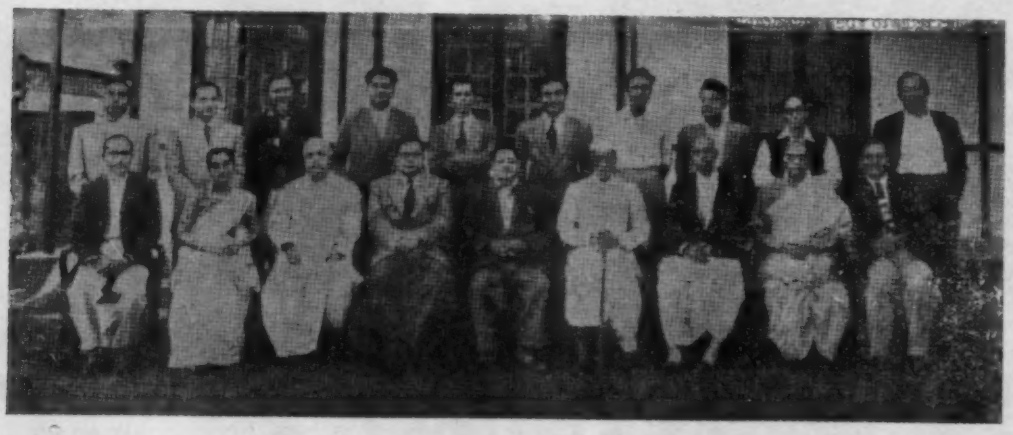
This gives us much food for thinking. If more than one system of medicine is to be taught, the basic medical qualification should be insisted upon every one who desires to specialise in other branches of medicine. Recent recommendations of the Dave Committee should be given serious thought before it is implemented. I feel strongly that the Medical Council of India should be the only recognised supreme body to control medical and post-graduate medical education of the country. Institution of other Councils than this, will stand in the way of progress of Medical Science.

Family Planning

There has been a misconception in the minds of the people who regard family planning as birth control. It is in reality a planned parenthood and is meant to educate the people in spacing their issues as they desire. Maternal and infant mortality is abnormally high in our country due to poverty, ignorance and ill health. Family planning teaches how to plan a family without endangering the health of the mother and to bring happiness of all concerned. Dr. (Mrs.) Sushil S. Gore, Officer on Special Duty, F. P., Union Health Ministry writes,

> "The family planning programme aspires to offer a five point plan (i) to improve maternal and child health through correct spacing and by limiting the size of a family, based on medical and socio-economic factors, (ii) to help families to improve their standards of living by wise planning, (iii) to create quality in the next generation, (iv) to stabilize the population at a level consistent with national economy and (v) to help those who have no children, assist them, if possible, to enjoy the beauty of parenthood".

Interpreted in its proper perspective and judiciously taken by our countrymen it will bring peace and happi-



Reception Committee Office-bearers.

ness to each and every family. What is needed, is the proper education of the people on this subject and well organised Family Planning Centres.

Nationalisation of Health Service

I am of definite opinion that for catering scientific medical aid to the entire population, nationalisation of health service is the only probable solution. The vast majority of our population is unable to avail of the help of scientific medicine mainly for financial difficulty. Illiteracy is no doubt a factor but unemployment, high cost of living, low price of agricultural produce, have adverse effect on the purchasing capacity of the major portion of our population so they cannot pay for the costly medicines both for the preventive and curative purpose. E.S.I. scheme, now in operation in industrial areas of some of the States, is no doubt a step forward and on its success or failure will depend the policy to be worked out to nationalise health service. At present it is limited to the workers only but its extension to the members of the workers' families should be made at the earliest opportunity. Concerted action of all parties concerned, namely E.S.I. Corporation, Government, the organised medical profession, industrialists and the workers, are needed to make the scheme a success. On such a scheme which concerns the welfare of the people, there should not be any conflict between the Government and the Medical Association, particularly in a country like ours where welfare of the people is the motto of the Government.

Role of Private Organisations

Till and until our State Government takes up entire responsibility of the health of our population, the importance of private organisations in arranging medical help is bound to exist and be extended. Enterprises like Srimanta Sankar Mission should always be patronised and must be substantially helped by the State and the public. They are doing yeoman service to tottering humanity both in the form of medical aid, arranging for health, education and rendering health services in the hills and plains. Their service in arranging mobile eye camps and establishment of the blind school and orphanage and in fighting the K. A. menace and Leprosy has been highly appreciated from every circle.

Spurious Drugs and Adulterated Food

The practice is rampant and it can definitely be said a national calamity. It is slowly eating away the vitals of the nation and bringing in disastrous results in cases of serious illness. The Association has been fighting for long to make the offence a cognisible one with provision of deterrent punishment for the culprit. I would request the Government to take early steps in the matter and urge upon the medical profession and the public to be always on their guard to put a stop to this heinous crime.

Profession and Press

It is painful for us all to find in the pages of newspapers, the reports of unsympathetic behaviours of medical personnel in private practice or in service, specially in hospitals.

Ours is a noble profession with a high tradition behind it. It is a calling—not a business; it is a sacred service—not a trade. I hope, none of us will lag behind to discharge his duties to the people and to the State, keeping in mind always that the medical profession stands on its tradition, honesty and dignity.

I feel that a liaison between the Press and the Association can do away with lot of misunderstandings. In this connection, the initiative taken by the Calcutta Branch of the I.M.A. and the Journalists' Association of West Bengal is highly commendable."

The following resolutions were passed at the conference.

This conference records its deep sense of sorrow at the sudden and premature demise of the following members of the medical profession and the prominent leaders of our country and conveys its heart-felt condolence to the members of the bereaved families:

1. Dr. P. N. Ghose, Dibrugarh, 2. Dr. B. Barooah, Gauhati, 3. Dr. Jadab Sarma, Tezpur, 4. Dr. (Miss) Satya Bati Das, Tezpur, 5. Dr. L. C. Datta Choudhury, Nowgong, 6. Rabi Sankar Sukla, Madhya Pradesh, 7. Dr. B. N. Ambedkar, Bombay, 8. Dr. H. C. Mukharjee, Calcutta.

2. This conference of the Assam State Branch of I.M.A. puts on record its deep sense of regret and resentment at the attitude of the State Government in not giving due consideration and weight to the resolutions adopted in previous conference and urges upon the Government to take this association into confidence and to properly consider the resolutions adopted by this Association.

3. This conference learns with deep concern and disappointment that I. M. C. Bill 1956 adopted by the Lok Sabha falls far short of the just demand of I.M.A. and places on record its regret and resentment that the recommendation of the I.M.A. to provide one common schedule for all recognised medical qualification of the country and to provide joint electorate have not been considered and incorporate in the said bill and that the said bill was introduced into the Parliament without making reference to the Medical Council of India.

This conference therefore urges upon the Union Government to further amend the bill according to the recommendation of the I.M.A.

4. This conference of the Assam State Branch of the Indian Medical Association protests vehemently against the discriminatory attitude of the Life Insurance Corporation of India in the appointment of the Medical examiners and strongly urges upon the Union Government to see that the appointment of Medical examiners before the nationalisation be maintained.

5. For the smooth running of the Health Department a medical man should be appointed as the Secretary of the Department as has been the practice in Public Works Department. This conference therefore urges upon the State Government to appoint the D.H.S. as the Secretary of the Medical Department. This was also recommended by the Bhore Committee who laid great stress that the Secretary of the Medical Department should be a medical man.

6. Resolved that in the interest of welfare of the labourers the Government be requested to extend the benefits of the Employees State Insurance Scheme to the whole of this State.

7. This conference urges upon the Government to enact an anti-quackary act and to enforce the Drug Rules very strictly for which the I.M.A. extends its full co-operation to the Government.

8. This conference of the Assam State Branch of I.M.A. reiterates its oft repeated demand for the abolition of Sales Taxes on all medicines and medical accessories and therefore urges upon the Government to take immediate steps to exempt all drugs and accessories from levy of sales tax.

BRANCH NOTES

ASSAM STATE BRANCH—A meeting of the Assam State Council of IMA was held on 18-19 January 1957 at Dhubri. Twenty-three members were present. The meeting recorded its deep sense of sorrow at the death of the following members: (1) Dr. P. N. Ghosh, (2) Dr. B. Barooah, (3) Dr. L. C. Datta Choudhury, (4) Dr. J. Sarma, (5) Dr. (Miss) Satyabati Das. The annual report of the previous year was adopted. The audited accounts were also accepted. The budget estimates for 1956-57 were approved. Office-bearers for 1956-57 are the following: Dr. S. P. Nath—president; Dr. S. N. Sen Gupta—secretary; Dr C. S. Lahiri—joint secretary. Dr. K. C. Barooah was elected president and Dr. P. C. Duarah secretary of the Assam Medical Relief Committee. The accounts and reports of the Journal "Amar Swasthya" were adopted. Dr. L. K. Barroah was elected as editor of "Amar Swasthya". It was decided to publish a small bulletin showing the medical relief activities of the State Branch.

BELLARY BRANCH—A meeting of the branch was held on 27-4-57 with Dr S. R. Gorur in the chair. Dr. D. P. Rao spoke on "A few Recent Trends in Ophthalmology". The meeting requested the Government to open the new medical college in Bellary which the Government is proposing to open in the State.

BHAGALPUR BRANCH—Health Week was observed on 15-21 April '57. The week was inaugurated and the exhibition opened by Sri T. P. Singh, Commissioner, Bhagalpur Division. The programme included public utility lectures, cinema shows on health, baby shows, health exhibition, etc. In the baby show, prizes were distributed by Mr. B. B. Srivastava.

CHITALDROOG BRANCH—A meeting of the branch was held on 20-4-57. Dr. L. N. Rajagopala Rao presided. Dr. Annapurnamma read a case report on Coeliac disease. Dr. M. Appajappa read a few reports about Vesical Calculus.

COIMBATORE BRANCH—The annual meeting of the branch was held on 7-4-57. Dr. D. Sundareswaran presided. One hundred and fifty members were present. Dr. Sundareswaran appealed to the members to extend their co-operation to the forthcoming Provincial Conference. Office-bearers for 1957 were elected with Dr. T. V. Sivanandan as president, Dr. S. G. Rajarathnam as hony. secretary and Dr. C. N. Santhanam as associate secretary. Dr. R. V. Raja, Director, Institute of Venereology, Government Cancer Hospital, Madras, spoke on Natural Course of Chronic Diseases. Dr. C. H. Sivaraman of Kasturba Medical College, Mangalore spoke on "The Clinical Significance of Chest Pain".

DALTONGANJ BRANCH—"Health Week was observed from 15-4-57 to 21-4-57 according to the programme of the State branch. The inauguration was performed by Mr. S. K. Sinha, Dy. Commissioner, Palamau. Inoculation, Sanitary drive, lectures in schools and colleges on the preventive diseases, cinema shows on health, were included in the programme. Baby shows and physical feats were arranged and prizes given. The S.D.O. with his wife took active part in the celebration.

DHANBAD BRANCH—The branch observed Health Week from 15-4-57 to 21-4-57. The function was inaugurated by Dr. Sri P. C. Bose, M.P., the S.D.O. of Bagmara Subdivision presided. An interesting programme was arranged for the week. Baby shows and Health Exhibition were held and prizes were distributed. Popular lectures also on health matters were arranged.

GHUGUDANGA BRANCH—A meeting of the branch was held on 28-4-57 with Dr. S. S. Sarker in the chair. Fifteen members were present. After the routine business was over, Dr. S. K. Dutta spoke on "Adaptation Syndrome".

GORAKHPUR BRANCH—A meeting of the branch was held on 10-4-57 with Dr. I. B. Chowdhuri in the chair. Fifty members were present. The meeting condoled the death of Dr. S. K. Mukerji, ex-President of the Provincial Branch. Dr. Jawahar Lal Rohatge was congratulated on his appointment as Dy. Minister of Health in U.P. The following cases were shown: (1) The Artificial Urinary Bladder by Drs. S. Singh and S. S. Verma; (2) Skiagrams, Barium Meal Investigation in the Gastro-intestinal tract; (3) A suspect case of Cruciating pain of the chest with cough, later detected as fracture of the 6th rib by Dr. S. P. Agrawal.

HAJIPUR BRANCH—Health Week was celebrated by the branch on 15-21 April 1957. Sri K. M. Thakur, S.D.O. inaugurated the function. Some of the gentlemen present on the occasion, spoke on health matters. Exhibition of physical feats, Baby Shows and best physique competition were held and prizes were given. Public meetings were arranged almost every day in the week and lectures on preventive medicine with film shows were given.

HARDOI BRANCH—The 1st meeting of the year 1956-57 was held on 4-10-56. Office-bearers were elected with Dr. S. N. Lal Asthana as president, Dr. P. D. Saxena as hony. secretary and Dr. K. D. Pandia as hony. joint secretary.

During the first half of the year 1956-57, 6 ordinary and 5 scientific meetings were held. In the ordinary meetings, besides organisational matters, professional problems of interest were discussed. In the scientific meetings, interesting cases were shown and papers read.

HYDERABAD BRANCH—An extra-ordinary general body meeting of the branch was held on 2-4-57 with Dr. S. Venkateshwar Rao in the chair. In connection with the 1st All Andhra Pradesh Medical Conference, a reception Committee was formed with Dr. S. Venkateshwar Rao as chairman, Dr. M. Yusuf Mirza as general secretary and Dr. A. S. Puntambeker Dr. M. Vasudeva Rao and Dr. Mrs. K. R. Bhandari as joint secretaries. The office of the Reception Committee was located in the IMA building at Sultan Bazar, Hyderabad.

JAGATDAL BRANCH—A general meeting of the branch was held on 7-5-57 with Dr. A. K. Basu in the chair. The meeting drew attention of the Chairman of the local municipality to the acute scarcity of drinking water in certain parts of the area and requested him to take immediate action in the matter. The meeting also requested the Home Minister and the I.G. Police, West Bengal, to take more energetic measures in tracing out the culprit in connection with the murder of late Dr. S. C. Bhattacharjee of Anglo-Indian Jute Mills.

JAMTARA BRANCH—Health Week was observed from the 15th to 21st April under the auspices of the branch. The inauguration was done by Mr. R. Prasad, the local Dy. Magistrate. Cinema shows on health matters, popular lectures on preventive medicine, exhibition of physical feats were arranged. Baby shows were also held and prizes given.

JAMUI BRANCH—Health Week was celebrated from 15-4-57 to 21-4-57. The programme included public utility lectures, mass inoculation and vaccination, sanitation drive, baby show, A.C.C. and N.C.C. rally and mass drill by school children. Baby shows were arranged and prizes given.

JAYNAGAR BRANCH—Health Week was celebrated on April 15-21, 1957. The ceremony on 15-4-57 was inaugurated by Dr. B. N. Jha, Civil Asst. Surgeon of Madhubani and presided over by Sri M. Prasad, Block Development Officer. During the week public meetings were held and popular lectures on health matters particularly on prevention of diseases, films were shown and baby shows were arranged and prizes distributed.

KALNA BRANCH—A meeting of the branch was held on 28-4-57, with Dr. S. C. Mallick in the chair. Seven members were present. It was suggested that the active members of the Medical Life Insurance Examiners be retained. The inclusion of families in E.S.I. Scheme was approved. It was suggested that one more member should be included in the Medical Relief Co-ordination Committee.

KALYANI BRANCH—A general meeting of the branch was held on 10-4-57 with Dr. D. K. Sen in the chair. Rationalisation of cadres of Health Services was considered and suggestions made. The recent government order on the grant of casual leave to medical officers was discussed. It was suggested that heads of the institutions be authorised to sanction the 5 days' casual leave as before.

KAREEMNAGAR BRANCH—A clinical meeting of the branch was held on 14-4-57 with Dr. Md. Gulam Nabi, Civil Surgeon, in the chair. Three interesting cases were demonstrated from the hospital and one case by Dr. G. Reddy, Medical Officer, Sircilla.

KARNAL BRANCH—A clinical meeting of the branch was held on 17-3-57 with Col. H. A. Bali in the chair. Lady Dr. Miss Kirpal Kaur read a paper on Congestive Heart Failure.

MADRAS STATE BRANCH—A meeting of the Council of Madras State Branch was held on 20-1-57. Twenty-three members were present. Dr. V. P. Vasudevan presided. The president in his introductory speech appealed to members to take a great interest in the affairs of IMA and to contribute articles in sufficient number to the JIMA. He regretted that the State Government did not take into confidence the IMA in implementing the health programmes of the II Five-Year Plan. The meeting placed on record its deep sense of sorrow at the death of (1) Dr J. Dhairyam; (2) Dr. K. Lakshminarayana Rao; (3) Dr. V. Jagadeeson. The hony. secretary informed the house that Dr. V. N. Samuel has been selected by the Central Office for training in Neurology in the Goldwater Memorial Hospital, New York. Regarding medical examiners of Insurance cases, the Council approved the line of action of the Central Organisation, IMA. Regarding Indian Medical Council Bill, the Council urged upon the Government of India to respect the opinion of the medical profession conveyed through IMA and amend the bill accordingly. The audited statement of accounts, the annual report of 1955-56 were approved and the budget for 1956-57 adopted. Regarding invitations to the State Medical Conference, it was decided to issue individual invitations enclosing a programme of the conference. The Cyclone Relief Fund of the State Branch was to be kept in a bank in a separate fixed deposit for utilisation in future according to necessity. The hony. secretary informed the House that an announcement has been published in the Madras Clinical Journal regarding the availability of the British Medical Journal at one half the usual rate of subscription. The hony. secretary placed before the House the replies of the Government to the resolutions passed at the 11th Madras State Medical Conference. Regarding claim of ownership of books and funds relating to South Indian Branch of the British Medical Association, the hony. secretary was requested to take necessary steps to get the amount due to this branch. The council accepted the invitation of the South Kanara Branch to hold the next meeting of the Council at Mangalore.

MADRAS CITY BRANCH—The Executive Committee met on 7-2-57 with Dr. R. Sankaran in the chair. Fourteen members were present. It was proposed that the old building fund committee be dissolved and a new committee formed. It was decided that the president and secretary in charge of office be given the freedom to carry on the work and report to the executive committee. The committee permitted the transfer of Authentification Stamp for International Vaccination and Inoculation Certificate from Dr. B. Rama Rao, hony. secretary to Dr. G. Ramachandramurthy, hony. secretary, clinical meetings.

An urgent executive committee meeting was held on 26-2-57 with Dr. R. Sankaran in the chair. Ten members were present. The executive committee recommended to the Central Body to purchase plot in Lakshmi Street, Alagappanagar, Madras 10.

A special general body meeting of the branch was held on 16-3-57 with Dr. R. Sankaran in the chair. Thirty-six members were present. The change of procedure of election of president and vice-president was not approved. The executive committee was authorised to proceed with the purchase of a plot at North Beach Road.

An executive committee meeting of the branch was held on 30-3-57 with Dr. R. Sankaran in the chair. Fifteen members were present. The statement of accounts was adopted. The president explained to the members his interview with the Collector of Madras regarding a plot of land on the North Beach Road. Thirteen new members were admitted.

MADURA BRANCH—A meeting cum picnic of the branch were held on 27-28 April 1957. Dr. A. Arunachalan presided. Fifty members attended. Dr. T. S. Chelvalumaran spoke on the "Embrylogical Development of Heart and its Relation to Congenital Anomaly". On the 28th the members went on sightseeing at Periyar Lake and there was a shooting competition.

MALABAR BRANCH—A meeting of the branch was held on 11-3-57. Dr. C. V. Narayana Iyer presided. Dr. T. K. Raman, Principal, Medical College, Trivandrum spoke on "Recent Advances in the Treatment of Diabetes Mellitus".

A meeting was held on 7-4-57. Dr. C. V. Narayana Iyer presided. Dr. C. Balakrishnan of the Medical College, Nagpur spoke on "Plastic Surgery". A subscription dinner was arranged to felicitate Dr. C. V. Narayana Iyer on his election as the Chairman of the Kozhikode Municipality.

MONGHYR BRANCH—A meeting of the branch was held on 11-11-56 under the presidentship of Dr. Sudhir Nath Sen. 29 members attended. The house considered the letter of Hon. State Secretary regarding change of rules. Routine association business was then transacted.

A meeting of the branch was held on 20-1-57 at Bhimbandh about 42 miles from Monghyr. The meeting was presided over by Dr. D. N. Roy. Forty members attended. The members spent the day in sightseeing. The house passed a resolution protesting against the insertion of Dalda advertisement in I.M.A. Silver Jubilee Number of the Journal.

A meeting of the branch was held on 10-2-57 at the village Malhipur on the other side of the Ganges. The meeting was presided over by Dr. S. N. Sen. 23 members attended Health Week Committee was formed for celebration of Health Week at Monghyr.

A farewell party was arranged by the branch on the eve of transfer of Dr. D. N. Roy, President of the branch.

A meeting of the branch was held on 18-3-57. Dr. Sudhir Nath Sen presided. 31 members attended. Dr. S. N. Sen was elected as president of the branch. The house decided to invite the State Working Committee meeting. A resolution regarding the appointment of medical examiner by the Life Insurance Corporation of India was then adopted. The house further discussed to improve the association hall.

The branch observed the 22nd anniversary on 13-4-57. A full day programme was drawn up. Dr. S. M. Ghosal, Dr. P. N. Sinha, Dr. Damodar Prasad, Hon. State Secretary of Patna were present on the occasion. Dr. S. M. Ghosal delivered a refresher course lecture on "Brights diseases". In the evening a group photo was taken. This was followed by variety entertainments.

Health Week was inaugurated on 15-4-57 by Sri K. D Narayan Singh. Dr. K. P. Mitra presided over the function. A heavy programme was selected for the week. Lectures on prevention of diseases, importance of pure water, family planning and antenatal care, and on different aspects of positive health were delivered by eminent men. Baby show and exhibition of physical feats were arranged and prizes given.

MEERUT BRANCH—A meeting of the branch was held to record its deep sense of sorrow at the sad end of Dr. R. P. Goel, a very senior member of the branch.

NAGPUR BRANCH—The annual general body meeting of the branch was held on 6-3-57. Office-bearers for 1956-57 were elected with Dr. D. G. Makadam as president and Dr. R. S. Ahuja and Dr. P. C. Singal as secretaries. The annual report of the branch for 1955-56 shows that membership increased from 97 to 127 during 1955-56. Eleven general body meetings and 7 executive body meetings and 7 clinical meetings were held during the year. Dr. A. C. Ukil, the president paid a visit to this branch on 15-5-56. Four members of the branch were selected for internship.

NIZAMABAD BRANCH—A clinical meeting of the branch was held on 26-4-57 with Dr. S. N. Mathur, Civil Surgeon in the chair. He demonstrated some interesting cases in Civil Hospital.

RATNAGIRI BRANCH—The annual meeting of the branch was held on 15-9-56 and office-bearers were elected with Dr. S. F. Benjamin as president and Dr. S. R. Rajwada as hony. secretary. Dr. T. N. Pai, Founder of the Kasturba Medical College gave a talk regarding his experience in the field of medical education. Fourteen members were present.

SAHIBGANJ BRANCH—Health Week was observed from 15-4-57 to 21-4-57. The Week was inaugurated by the S.D.O. The hony. secretary of the branch spoke about the health week. Dr. R. N. Chatterjee spoke on Family Planning. A Baby Show was held and prizes given. An exhibition on health matters with charts and models was held. Mass inoculation drive and exhibition of physical feats were arranged.

SECUNDERABAD BRANCH—A clinical meeting was held on 13-4-57 with Dr. N. K. Murthy in the chair. The following cases were demonstrated (1) Four cases of Filariasis of the Scrotum and the Penis by Dr. A. K. Shah, (2) A case of Florosis with typical bony changes of the lumber spine by Dr. U. Rama Varma. (3) A case of Pyrexia—Maxillary Sinusitis by Dr. G. N. Rao.

SHIMOGA BRANCH—A meeting of the branch was held at Sagar on 14-4-57. Dr. D. Shamanna, District Medical Officer, Shimoga spoke on Janarogya. Sri H. Sivalingappa, president, Town Municipal Council, Sagar presided.

A clinical meeting was held with Dr. D. Shamanna in the chair. The members condoled the death of Dr. S. V. Revanna one of the members of the branch. The following subjects were discussed: (1) Know the New Comers in Medicine (Recent advances in Therapeutics), by Dr. C. H. Sivaraman, (2) Trends in the management of some common surgical problems by Dr. N. L. Kalle, (3) Virus Investigations of Monkey Diseases in Sorab and Sagar Taluks by Dr. H. Trapid and Dr. T. H. Work of Rockefeller Foundation, Poona Camp, (4) A Rare Complication after Gastric Surgery by Dr. T. N. Sreenivaseati, (5) A Rare Case of Acute Pharyngitis and Laryngitis with severe degree of respiratory obstruction needing Tracheotomy by Dr. A. H. Kantharaja Setty.

SUPAUL BRANCH—A meeting of the branch was held on 6-4-57 with Dr. N. P. Mukherjee in the chair. Five members were present. There was a talk on "B. coli Infection."

TARAKESWAR BRANCH—Two ordinary meetings of the branch were held, one at Tarakeswar on 17-2-57 and the other at Jamalpur (Burdwan) on 7-4-57. Dr. H. S. Datta of Chittaranjan Seva Sadan and Cancer Hospital presided and spoke on "Coronary Thrombosis" and "Tuberculous Meningitis". Dr. Datta is an associate member of the branch. Discussion on Health Centres and Life Insurance Schemes took place and recommendations of Bengal Provincial Branch, I.M.A., were supported.

TIRUCHY BRANCH—A meeting of the branch was held on 30-3-57. Dr. K. G. Menon presided. Fifty members attended. The meeting congratulated Dr. B. P. Mathurani on his election to the Madras Legislative Assembly. Dr. Y. P. Vasudevan, president, Madras State Branch spoke on Sterility. Dr. T. S. Shetty of Royapettah Hospital spoke on "Problem of Deafness with special reference to Otosclerosis and the latest treatment, Rosen's operation—mobilisation of the stapes".

A meeting of the branch was held on 7-4-57. Thirty-five members were present. Dr. T. V. Srinivasan and Dr. Kalameghan spoke about the World Health Organisation. Prof. Valhagen of Leipzig spoke on "The changing phase of Ophthalmology".

A meeting of the branch was held on 20-4-57. Forty members were present. Dr. C. Balakrishnan gave a talk on Plastic Repair of Facial Defects. A film on Migraine was shown.

TIRUNELVELI BRANCH—A meeting of the branch was held on 23-2-57. Twenty-eight members were present. After the routine business was over, Dr. (Mrs.) C. A. Joseph spoke on Placenta Praevia.

UDAIPUR BRANCH—A meeting of the branch was held on 26-2-57 in the General Hospital to welcome the president of the Rajasthan State Branch, Dr. B. N. Sharma. Dr. R. N. Sachdeo presided. Dr. Sachdeo in his welcome speech said that since Dr. Sharma has taken over as the Director of Medical and Health Services to the Government of Rajasthan, he gave personal attention to all the grievances placed before the government. Dr. Sharma in his reply asked the members of the Association to co-operate with the government in all development and health programmes. He suggested the publication of a State periodical containing social and clinical activities of the branches. He emphasised that proper attention be paid to Research work.

VISAKHAPATNAM BRANCH—A meeting of the branch was held on 30-4-57 with Dr. K. Suryanarayanamurthy in the chair. A symposium on Medical Emergencies was held. Dr. K. Suryanaravana, Dr. K. Kishnamurthy, Dr. P. Kotaiah, Dr. Satyanarayanamurthy, Dr. A. Shankararao and Dr. K. Suryanarayana participated in the symposium.

WEST GODAVARI BRANCH—The annual conference of the branch was held on 28-4-57 at Elura. The annual report presented by the secretary showed that membership for the year was 58. There were 6 meetings in the year. Scientific discussions were held in the meetings. Office-bearers for 1956-57 were elected with Dr. V. V. G. Tilak as president, Dr. R. Narasimha Raju as hony. general secretary and Dr. V. Venkata Rao, Dr. P. Kameswara Rao and Dr. P. Subrahmanyam as joint secretaries. Dr. H. M. Rao, District Medical Officer, inaugurated the conference. In the scientific meeting which was presided over by Dr. C. S. Sadasivam, Superintendent, Government Tuberculosis Sanatorium, Tambaran, Madras, the following subjects were discussed, (1) Uterine Haemorrhages by Dr. R. Reddi of Guntur Medical College, (2) Recent Concepts on Acute Coronary Occlusion by Dr. P. Lakshmana Rao of Guntur Medical College and (3) Surgical Treatment of Cirrhosis Liver by Dr. C. S. Sadasivam of Government Tuberculosis Sanatorium, Tambaram.

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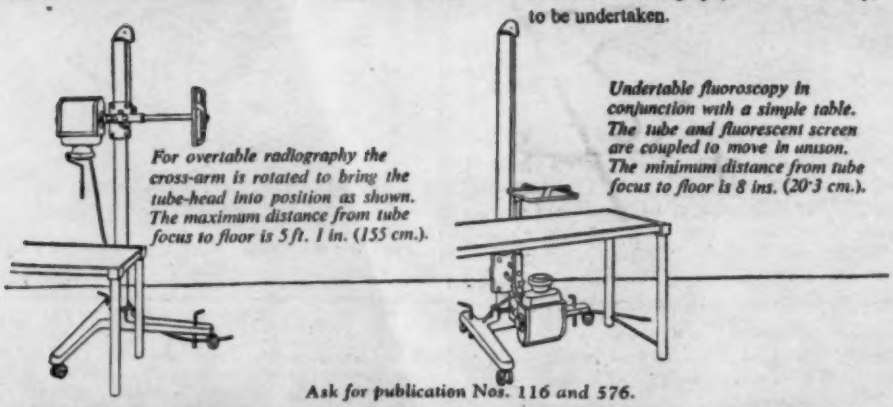

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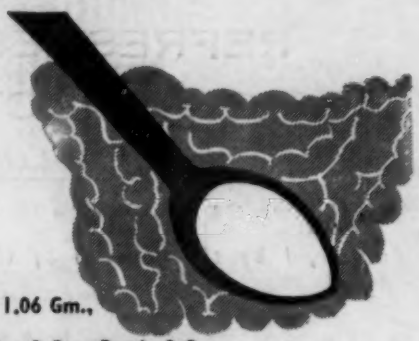

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